## Capitalism Bad

### Poverty and Resource Sustainability

#### Capitalism solves poverty and improves resource stability-

Saunders 16 – MA in Environment and Planning, PhD in engineering-economic systems from Stanford University (Harry, “Does Capitalism Require Endless Growth?,” The Breakthrough Institute, http://thebreakthrough.org/index.php/journal/issue-6/does-capitalism-require-endless-growth)

6. There is another path to stable and declining calls on the planet’s endowment of natural capital. Malthus erred not only because he failed to understand the relationship between fertility rates and food consumption but also because he underestimated the rate at which agricultural productivity would improve. By growing more food on every acre of land, human societies avoided mass starvation. More broadly, rising economic productivity due to technological advances raises incomes, creates economic surplus that can be reinvested in new capital and infrastructure, and produces more economic output from less natural capital input. So long as there are large populations living in deep poverty, gains in economic productivity will be put toward greater output, assuring that some or all of the efficiencies associated with productivity gains will be put toward greater production and consumption. But once everyone on the planet achieves a satisfactory level of consumption, consumption of goods and services should stabilize while calls on natural capital should stabilize and then decline.[34](http://thebreakthrough.org/index.php/journal/issue-6/does-capitalism-require-endless-growth#foot34) By satisfactory levels of consumption, what I mean is a standard of living that would be recognizable to the average citizen of an advanced developed economy — modern housing, an ample and diverse diet, sufficient electricity for run-of-the-mill household appliances, roads, hospitals, well-lit public spaces, garbage collection, and so on. The saturation of demand for goods and services in advanced developed economies in the latter half of the twentieth century provides a reasonable proxy for the point at which most people start to see diminishing utility from further household consumption. In a zero-growth world, in which household consumption has saturated while labor- and resource-sparing technological change continues, leisure time grows continually over time while societal calls on natural capital decline.[35](http://thebreakthrough.org/index.php/journal/issue-6/does-capitalism-require-endless-growth#foot35) Given these conditions, how quickly a zero-growth economy is achieved, and calls on natural capital globally peak and then decline, depends upon three closely related phenomena: how rapidly global population stabilizes, how rapidly incomes among the global poor rise, and the rate at which resource-sparing technological change occurs. 7. Getting to a zero-growth steady state economy with declining calls on natural capital will require, then, sustaining — or better yet, accelerating — two trends that capitalism has proven better able to advance than any alternative economic arrangement to date: lifting large agrarian populations out of poverty, and improving resource productivity through technological change. The former, as noted above, is also the key to stabilizing global population.

### War

#### The spread of capitalism causes world peace!

Mousseau, 19—Professor in the School of Politics, Security, and International Affairs at the University of Central Florida (Michael, “The End of War: How a Robust Marketplace and Liberal Hegemony Are Lead ing to Perpetual World Peace,” International Security, Volume 44, Issue 1, Summer 2019, p.160-196, dml)

Is war becoming obsolete? There is wide agreement among scholars that war has been in sharp decline since the defeat of the Axis powers in 1945, even as there is little agreement as to its cause.1 Realists reject the idea that this trend will continue, citing states' concerns with the “security dilemma”: that is, in anarchy states must assume that any state that can attack will; therefore, power equals threat, and changes in relative power result in conflict and war.2 Discussing the rise of China, Graham Allison calls this condition “Thucydides's Trap,” a reference to the ancient Greek's claim that Sparta's fear of Athens' growing power led to the Peloponnesian War.3 This article argues that there is no Thucydides Trap in international politics. Rather, the world is moving rapidly toward permanent peace, possibly in our lifetime. Drawing on economic norms theory,4 I show that what sometimes appears to be a Thucydides Trap may instead be a function of factors strictly internal to states and that these factors vary among them. In brief, leaders of states with advanced market-oriented economies have foremost interests in the principle of self-determination for all states, large and small, as the foundation for a robust global marketplace. War among these states, even making preparations for war, is not possible, because they are in a natural alliance to preserve and protect the global order. In contrast, leaders of states with weak internal markets have little interest in the global marketplace; they pursue wealth not through commerce, but through wars of expansion and demands for tribute. For these states, power equals threat, and therefore they tend to balance against the power of all states. Fearing stronger states, however, minor powers with weak internal markets tend to constrain their expansionist inclinations and, for security reasons, bandwagon with the relatively benign market-oriented powers. I argue that this liberal global hierarchy is unwittingly but systematically buttressing states' embrace of market norms and values that, if left uninterrupted, is likely to culminate in permanent world peace, perhaps even something close to harmony. My argument challenges the realist assertion that great powers are engaged in a timeless competition over global leadership, because hegemony cannot exist among great powers with weak markets; these inherently expansionist states live in constant fear and therefore normally balance against the strongest state and its allies.5 Hegemony can exist only among market-oriented powers, because only they care about global order. Yet, there can be no competition for leadership among market powers, because they always agree with the goal of their strongest member (currently the United States) to preserve and protect the global order based on the principle of self-determination. If another commercial power, such as a rising China, were to overtake the United States, the world would take little notice, because the new leading power would largely agree with the global rules promoted and enforced by its predecessor. Vladimir Putin's Russia, on the other hand, seeks to create chaos around the world. Most other powers, having market-oriented economies, continue to abide by the hegemony of the United States despite its relative economic decline since the end of World War II.6 To support my theory that domestic factors determine states' alignment decisions, I analyze the voting preferences of members of the United Nations General Assembly from 1946 to 2010. I find that states with weak internal markets tend to disagree with the foreign policy preferences of the largest market power (i.e., the United States), but more so if they are major powers or have stronger rather than weaker military and economic capabilities. The power of states with robust internal markets, in contrast, appears to have no effect on their foreign policy preferences, as market-oriented states align with the market leader regardless of their power status or capabilities. I corroborate that this pattern may be a consequence of states' interest in the global market order by finding that states with higher levels of exports per capita are more likely than other states to have preferences aligned with those of the United States; those with lower levels of exports are more likely to have interests that do not align with the United States, but again more so if they are stronger rather than weaker. Liberal scholars of international politics have long offered explanations for why the incidence of war may decline, generally beginning with the assumption that although the security dilemma exists, it can be overcome with the help of factors external to states.7 Neoliberal institutionalists treat states as like units and international organization as an external condition.8 Trade interdependence is dyadic and thus an external condition.9 Democracy is an internal factor, but theories of democratic peace have an external dimension: peace is the result of the expectations of states' behavior informed by the images that leaders create of each other's regime types.10 In contrast, I show that the security dilemma may not exist at all and how peace can emerge in anarchy with states pursuing their interests determined entirely by internal factors.11

### Climate Change

#### Cap solves resource issues and warming—tech innovation and economic incentives prove

McAfee 19- a scientist and cofounder of the MIT’s Initiative on the Digital Economy, is the author of More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources—and What Happens Next. (Andrew McAfee, “Technology Will Keep Us From Running Out of Stuff,” Wired, 10/23/19, https://www.wired.com/story/technology-will-keep-us-from-running-out-of-stuff/)///mcu

THIRTY YEARS FROM now, we’ll need to feed, clothe, shelter, and otherwise provide for 2 billion more people. Human-caused global warming is going to make these tasks challenging as it produces more deserts, droughts, heatwaves, and other stresses. Even so, I believe we’ll easily meet our challenges and take better care of the people who inhabit the world of the future, without experiencing sustained shortages of food or other important resources. Not everyone shares this view. In February, the World Economic Forum warned that “the food system is currently in the red; it is extracting more than can be sustained and we are pushing nature to the brink.” In August, the UN’s Intergovernmental Panel on Climate Change released an extensive report forecasting land degradation and associated food insecurity in the decades ahead. Its headlines for policymakers were grim: As one of the report’s authors summarized, “Food security will be increasingly affected by future climate change through yield declines—especially in the tropics—increased prices, reduced nutrient quality, and supply chain disruptions.” It’s not just food; some think we also might run out of important minerals. The European Chemical Society released a modified periodic table this year that looked at projected demand and supply over the next hundred years for the 90 natural elements. Fully half had “limited availability,” and of those 12 were facing a serious threat. Why am I so optimistic in the face of these credible, dire warnings? Because I (and others in my “ecomodernist” tribe) have a lot of faith that the two forces of capitalism and technological progress will continue their extraordinarily track record of providing for our wants and needs. Abraham Lincoln wrote that the patent system “added the fuel of interest to the fire of genius in the discovery and production of new and useful things.” “The fire of genius” is a wonderful label for technological progress. “The fuel of interest” is an equally concise summary of capitalism. They interact in a self-reinforcing and ever-expanding cycle. How well has this cycle worked in the past? Let’s look at two telling examples. In 1968 Paul Ehrlich published the bestseller The Population Bomb, in which he warned of acute future food shortages. Early editions of the book began, “The battle to feed all of humanity is over. In the 1970s hundreds of millions of people will starve to death in spite of any crash programs embarked upon now. At this late date nothing can prevent a substantial increase in the world death rate.” Ehrlich’s predictions about rapid population growth were spot on. Global population increased from 3 to 4 billion between 1959 and 1974, and subsequent billions were added in 15, 12, and 11 years. But mass starvations largely did not occur; instead, the opposite happened. People all around the world became better nourished. In 1968 only Northern America, Europe, and Oceania supplied their people with an average of at least 2,500 calories a day (widely assumed to be necessary for an active adult male to maintain his body weight), and as recently as 1980 the world average was still below this number. Yet by 2005 every region in the world had met this standard. In 1972 a team of computer modelers at MIT led by Donella Meadows published The Limits to Growth, another blockbuster. Their simulations found that unchecked exponential growth in populations and economies was bound to cause a massive global crash of resource depletion, sometime during the 21st century. Even under the most optimistic scenarios, known global reserves of gold would be used up within 29 years of 1972; silver within 42; copper and petroleum 50; and aluminum 55. These predictions weren’t accurate at all. We still have gold and silver—large reserves, in fact. Much bigger than in 1972, despite almost half a century of additional consumption. Known global reserves of gold are almost 400 percent larger today than in 1972, and silver reserves are more than 200 percent larger. And it’s probably not too early to say that we’re not going to run out of copper, aluminum, and petroleum as quickly as estimated in The Limits to Growth. Known reserves of each are much larger than they were then. Known aluminum reserves are almost 25 times what they were in the early 1970s. Given what we know about the power of capitalism and tech progress, we should expect rich countries to be getting more from less. The Population Bomb and The Limits to Growth were so far off because they failed to fully understand both the fire of genius and the fuel of interest. By and large, they didn’t take into account that as soon as shortages of food, metals, or other resources appeared, an intense global search for more would ensue, along with an equally ardent hunt for substitutes. As one or both of these quests succeeded, the shortage would ease and prices would plummet. Economist Julian Simon did understand this dynamic. He explained why resource scarcity was not a real problem in his 1981 book The Ultimate Resource (which remains underappreciated), and in 1990 he won a decade-long bet with Erhlich about resource prices; Ehrlich wagered, incorrectly, that they’d remain high because of permanent scarcities. Researchers Gale Pooley and Marian Tupy calculate the “Simon Abundance Index,” which takes into account both global population and the prices of 50 commodities important for human welfare—everything from sugar to salmon to iron ore to natural gas—expressed in terms of how long the average person in the world has to work to afford one unit of each. Every one of the 50 has become more affordable since 1980, even as global population has exploded, and most have become several times more affordable. The aggregate Abundance Index was set equal to 100 in 1980; by 2019 it had climbed to almost 620. The authors of the World Economic Forum and IPCC reports, the periodic table of future natural element availability, and many other pessimistic forecasts of our ability to provide for ourselves appear to not be taking into account Simon’s insights, or not believing that they’re still relevant. They are. Climate change is real and will cause more harm the longer it remains unaddressed, but I don’t believe it will not cause us to lose the ability to feed the world over the next few decades. Global average temperatures have risen by around six-tenths of a degree Celsius since 1980. Butas we’ve seen, every region in the world has greatly increased food availability to its people during that time. It’s extremely unlikely that the predicted increase of another 0.75 to 1 degree between now and 2050 will reverse this trend, and eliminate our ability to adequately nourish the world’s people. It's true that the global rate of undernourishment has ticked up by 0.2 percent since 2015, but I bet this increase will reverse itself in the years ahead as markets and technologies continue to spread. Any takers? In fact, I’m confident that many countries will be able to increase their overall output of food and all other products in the decades ahead while using fewer metals, minerals, fertilizer, water, cropland, trees, fossil fuels, and other resources of the earth. I’m confident because America is already doing so. The US, which accounts for about 25 percent of the global economy, consumes more material goods year after year, yet continues to decrease consumption of the resources listed above. What’s more, the country’s use of both electricity and energy in general has been essentially flat for the past decade. How did the US start getting more from less? By using the tools of the digital age—hardware, software, and networks—to progressively dematerialize our consumption. In other words, we kept finding ways to use fewer atoms by using more bits. Aluminum cans are more than 75 percent lighter than they were a few decades ago as engineers have used computer-aided design to make them lighter without sacrificing strength. Precision agriculture, aided by lots of sensors and computation, lets farmers selectively apply small amounts of water, fertilizer, and pesticide where needed instead of blanketing entire fields. Of the 15 devices featured in a 1991 Radio Shack ad, 13 have now vanished into the smartphone. Thanks to our smartphones, we now also buy many fewer compact discs, atlases, rolls of film, videotapes, and many other media. Examples like these can be found all over the economy. Their cumulative impact is a sea change in our relationship with our planet. We **used to increase our prosperity by taking more from the earth year after year. Now we know that we can grow and flourish while taking less.** America’s experience isn’t unique. Evidence strongly supports that the UK is also dematerializing, and that other rich countries are seeing flat or declining consumption of important resources. T**his shouldn’t be surprising, since all of today’s rich countries have well-functioning market economies and lots of modern technologies.** Given what we know about the power of capitalism and tech progress, we should expect them to be getting more from less. More importantly, we need to stop devoting time and effort to planning for future research shortages. In a world where abundance and dematerialization are both increasing, this makes no sense. It makes great sense, however, to work on the challenges that capitalism and tech progress don’t solve on their own. These include reducing pollution, especially greenhouse gas pollution; protecting threatened species and lands; and bringing back opportunity to communities that have been left behind as capitalism and tech progress race ahead. All of these urgently require our attention now and in the years ahead. But we don’t need to worry that we’re going to run out—or run short of—critical resources in the decades to come. There’ll be plenty for everyone.

### Democracy

#### Economic freedom is a pre-requisite to Democracy.

Shruti Rajagopalan 21, writer at the Mint, 2/2/2021, "There is no political freedom without economic liberty," <https://www.livemint.com/opinion/columns/there-is-no-political-freedom-without-economic-liberty-11612277918481.html>, Marsh

Explicit censorship laws are rightly criticized as an assault on democracy. But, India’s long legacy of socialist policies—price controls, quantity controls, and ownership controls on the means of production—also directly affects the resources Indians need to express themselves. The Yogi Adityanath government of UP is not the first to exploit this legacy and likely won’t be the last.

One famous example is the Indira Gandhi government’s attempt on 25 June 1975 to suppress news of the arrest of opposition leaders at the proclamation of Emergency. A chain of orders directed the general manager of Delhi Electric Supply Undertaking to cut off supply to newspaper offices in New Delhi. Newspaper editions from other cities carried the news, while some of the Delhi editions of 26 June struggled. The same story manifests itself in different ways —sometimes through diesel and electricity, and at other times, through social media and the internet.

It is not just ‘authoritarian’ leaders who have used means of production to control free speech. In the 1950s, the Nehru government passed the Newspaper (Price and Page) Act, 1956, and the Daily Newspapers (Price and Page) Order, 1960. These laws regulated the prices publishers could charge for newspapers, based on page count and the amount of content. Sakal Papers challenged their constitutionality. In Sakal Papers (P) Ltd. vs. The Union of India (1962), the Supreme Court held the laws unconstitutional as they would either increase prices or reduce the number of pages, both of which would inhibit the dissemination of ideas, and therefore violate Article 19(1)(a) of the Indian Constitution.

Unfortunately, the Supreme Court was not always consistent in fighting economic controls that infringed speech. Another socialist policy in the 1950s was to regulate the wages of journalists through the Working Journalists (Conditions of Service) and Miscellaneous Provisions Act, 1955. This was challenged by Indian Express, arguing that Wage Board rates would make it prohibitively expensive to run the newspaper. In Express Newspapers vs. Union of India (1958), the Supreme Court held this law valid, though it did set aside the punitive order of the Wage Board.

Even before the Emergency, Indira Gandhi’s government tried to use old orders in a new form to control press freedom. In addition to custom duties and limits placed on importing newsprint under the Import Order, 1955, and regulation of the sale, acquisition and use of newsprint under the Newsprint Order, 1962; the government directly regulated the size and circulation of newspapers under the Newsprint Policy of 1972-73. When challenged, in Bennett Coleman & Co. vs. Union of India (1973), the Supreme Court held that regulating newsprint supply and fixing quantity in terms of number of pages per newspaper would either lead to reduced advertisements or reduced news, and directly impact the economic viability of the paper.

These cases are a small sample of the long list of controls. They are not new. In fact, they are all pre-Emergency, imposed by Congress governments. The modern-day version of this is the internet lockdown in Kashmir, costly licensing fees for TV and radio broadcasting of news channels, and the shutdown of mobile networks, electricity, internet, social media platforms, and specific media accounts to quell protests. It is the same old economics of control that directly impacts freedom of press, civil liberties and the core of a functioning democracy.

This is also not just an Indian aberration. In The Road to Serfdom (1944), F.A. Hayek pointed out the deep link between political and economic freedom, and warned the world that without economic freedom, civil liberties remain under threat. In Capitalism and Freedom (1962), Milton Friedman argued for strong property rights protection and economic freedom as a requirement for democracy. This theory also holds up empirically. In a 2018 study, Christian Bjørnskov analysed the relationship using measures of economic freedom and press freedom indices in 177 countries. He finds that improvements in economic freedom are associated with subsequent improvements of press freedom, and that the overall association is mainly driven by changes in market openness.

Socialists and progressives who support price controls, quantity controls and minimum wages across other sectors are often the first to cry foul when these tools are used against journalists. But this view is myopic. The Uttar Pradesh administration’s restriction of diesel sales to protesting farmers demonstrates that the economy is not separate from the individuals who inhabit it. All our actions—economic, political, civic—are deeply entangled. Letting the government control the prices and sale of diesel can be as harmful to our freedom and democracy as direct censorship.

### Disease

#### Unleashing the market solves disease---all answers don’t assume that there is not enough capitalism.

Kerry Jackson, writer for the Orange County Register, 12/18/20**16**, "Free market policies needed to incentivize creation of new life-saving treatments,” https://www.ocregister.com/2016/12/18/free-market-policies-needed-to-incentivize-creation-of-new-life-saving-treatments/, Marsh

Yet new drug approvals increased over the last decade. Don’t look for a surge of antimicrobial drugs in that pipeline, though. Winegarden says that particular drug class is among several that “face unique impediments” that serve as disincentives for innovation.

To overcome the steep hill that impedes the development of new AMR drugs, lawmakers must implement policies that unleash the incentives of the free market. Policymakers also should look at the 1983 federal Orphan Drug Act and its market-oriented reforms that increased the number of drugs developed to treat rare diseases. More than 400 have been introduced to the market since the law was enacted, compared to fewer than 10 in the 1970s.

Put another way, government needs to remove its anchors from the process and let the market do what it does so well. In this case, that’s restoring patients’ health, enriching innovative companies that create jobs, and inspiring biotech start-ups such as the group of Stanford undergraduates that has been capitalized to develop new antibiotics. If the proper incentives are in place, the needed treatments will follow.

### Inequality

#### Capitalism is best at solving equality---alternatives cause an endless cycle of poverty.

Jeffrey Overall 17, Assistant Business Professor at Nipissing University, 2017, “Practice what you preach: the failure of the welfare state and the discovery of total equality through capitalism,” *International Journal of Public Policy*, 13(1), pp 69-85, https://doi.org/10.1504/IJPP.2017.081049, Marsh

The ineffectiveness of the welfare state

There are many advantages to social programs. For example, universal healthcare offers all citizens, rich and poor, free access to basic healthcare. Free education ensures that literacy rates remain at sustainable levels and the welfare provided to low-income families can assist in minimising homelessness. Although many countries admire those that have social services built into their political structures, the success of these programs in alleviating social problems has been challenged (Harrigan and Wang, 2011; Pieterse, 2002). It has been argued that aid, defined as providing monetary assistance to the disadvantaged, in general, does not solve social problems (Harrigan and Wang, 2011; Pieterse, 2002). For example, the American Government has provided nearly $3.5 trillion in foreign aid; however, it has been argued that this has resulted in minimal (if any) positive impact on reducing poverty and has failed to sustain modest economic growth in Africa (Morrissey, 2006). In many ways, it has been argued that aid has caused the problem to perpetuate as it creates dependency (Teijlingen et al., 2012).

Consistent with the issues involving international aid, there have been equally disappointing results with welfare, which is a state-funded social assistance program that provides monetary support to low-income families. Specifically, there has been empirical evidence from the USA that demonstrates that the welfare state encourages dependency, lowers recipients’ self-esteem, causes a lack of motivation, and denies individuals any opportunity to a better life (Angus, 1992) as they are locked-in to a cycle of poverty. Through this, individuals are incapable of becoming self-sufficient (Hiller and Reeves, 1973) and, as a result, the welfare state leads to a generational problem through not only the expansion, but also the perpetuation of welfare dependence (Aras and Crowler, 2008; Bochel et al., 2011; Brown, 2012; Kaufman and Nelson, 2012; Winters, 2008). In addition, recipients are marginalised as there are negative social connotations associated with receiving social assistance (Tanner, 1994), which tends to contribute to depression among recipients (Coiro, 2001). Not only that, it has been shown that welfare has been argued to cause crime rates (Tanner, 1994) to continue, unabated as the resources received through welfare are barely sufficient for individuals to surmount their impoverished state. As such, recipients attempt to supplement their income through illegal means. Moreover, those that receive social assistance have virtually no incentive to become productive members of society as their basic needs are supplied by the government (Teijlingen et al., 2012). It is important to note that these issues cannot solely be blamed on the welfare state as there might be several intervening variables, such as weak family ties with many single-parent households, high illiteracy rates, lack of formal education, and a lack of resources, which may compound the issue. As outlined by Dawkins (1976), the welfare state is an unnatural phenomenon that can lead to individuals exploiting and gaming the system, which seems to be occurring in practice.

However, as was shown, the welfare state can lead to the perpetuation of these problems as there is a lack of incentive to improve as the state provides the basic means for survival. Most concerning is that the failure of the welfare state continues to fundamentally infringe on the human rights of the wealthy. The state restricts the freedom of the wealthy by placing a significant burden upon them as they are forced to transfer their wealth to the poor (Angus, 1992). It is a popular view that this may result in a slowdown in economic growth (Bochel et al., 2011; Sadli and Thee, 1999) and rising unemployment (Mackenbach, 2012; Rosanvallon, 1988) as the highly educated members of society are often willing to emigrate to more competitive locals to avoid paying high taxes (Andersen, 2006; Gould and Moav, 2007; Karrass, 2008). In Africa, as an example, the supply of healthcare workers is exceedingly low as these members have the incentive to migrate to industrialised nations (Dovlo, 2004). This causes a shortage of manpower in not only healthcare, but all areas of human endeavours as the knowledge gained on the continent is no longer available (Muula, 2005; Ojo et al., 2011). Indeed, high taxation has been shown, empirically, to have an impact on brain drain (Wagner, 2000) and this might be detrimental on the productivity, social development, and human capital accumulation within a nation (Kuptsch and Fong, 2006; Wong and Yip, 1999). Clearly, excessive taxation might be unsustainable as the most productive members of society are forced to emigrate.

In parallel to these issues, high taxes have been found to decrease the economic rewards to entrepreneurs, which act as a deterrent to enterprising behaviour (Hoxha and Krasnigi, 2008; Kellerman, 2002; Nystrom, 2008). Mandatory contributions have a direct impact on determining the incentives for work effort, labour supply, career aspirations, and the propensity to upgrade one’s skills (Henrekson et al., 2010). This, in turn, may lower economic productivity, the skills of the workforce, and impairs the supply of skilled workers that are willing to participate in the labour force (Henrekson et al., 2010). Therefore, the failure of the welfare state appears to create a self-perpetuating problem, which is consistent with the failure of state socialism as a whole (Offe and Heinze, 2002). Indeed, the public good can never be achieved where one group is sacrificed at the expense of another because in this system, all human rights and personal freedoms are violated (Rand, 1961).

### The Patriarchy

#### Capitalism solves the patriarchy---four warrants.

Ann Cudd 14, Provost and Senior Vice Chancellor & Professor of Philosophy at the University of Pittsburgh, 5/21/14, “Is Capitalism Good for Women?” *Journal of Business Ethics*, pp 761-770, https://doi.org/10.1007/s10551-014-2185-9

Capitalism offers four mechanisms for overthrowing tradition and forging a path to end patriarchal oppression of women. Materially, capitalism subverts traditional forms of deformed desires and false consciousness by offering options that expand opportunities for women. By offering jobs and wages to women, capitalism offers women an opportunity for activities outside the home and for income that opens other doors. In some developing countries, mainly those where men’s human capital is relatively low as well, women will immediately compete with men for equal wages. This gives women greater bargaining power within families and communities, and thus a greater ability to resist violence and exploitation by men of their community. Capitalism also offers the option for women to become entrepreneurs and thus their own bosses. The Grameen Bank founded by Yunus Muhammad and its many offshoot social enterprises provide concrete evidence that this is a real option for women in the developing world (Muhammad 2007).

The second mechanism capitalism offers to overthrow traditional culture is the ideology of individual rights, which can be adopted by women to disrupt the traditional gender ideology (Gordon 1996). Capitalism derives its prime justification from the maximization of individual liberty, and capitalist societies promulgate the ideology of individualism, which helps to break down patriarchal and sexist norms and practices of traditional cultures. A good example of this is the resistance to contraception and the forbidding of abortion common in traditional cultures. Capitalism directly provides incentives to fight against this resistance by making children less valuable as uneducated, unskilled laborers and more valuable when educated and raised to adulthood before going into paid employment. Capitalism also indirectly incentivizes having fewer children by allowing families to afford nutrition and health care, and thus improving health outcomes, of infants and children. Even in capitalist societies women and men must struggle against the forces of tradition to preserve women’s rights to reproductive and bodily autonomy. The ideology of individualism which capitalism reinforces and relies upon helps women and men to see women as valuable in themselves, and not only for the subordinated social roles that they fulfill. At the very least they are consumers who have their own preferences and tastes that the market attempts to satisfy. But capitalism is also part of the liberal worldview, which values individuals and individual autonomy above all else. Once the ideology of individual rights becomes widely known and discussed, the false beliefs of inferiority of women can be challenged and countered, and this in turn challenges evaluations of women as inferior.

Third, in promoting free market exchange, capitalism promotes the idea of mutual advantage. Adam Smith’s notion of the invisible hand is one original formulation of this idea. In capitalism, each person pursues their own advantage, and the advantage of the group arises. Another formulation of the idea of mutual advantage comes from the idea of a positive sum game, in which all the players may gain at the same time. By playing by the rules within a suitably constrained and monitored system, each one can strive to achieve without depriving others. Mutual advantage opposes the notion that women should sacrifice their own interests for the sake of others without any expectation of benefit (Gauthier 1986). In this way, capitalism enshrines the idea of equality in market exchange itself.

Finally, because capitalism promotes innovation, capitalist governments and firms promote science as a path to technical innovation. Science offers a means for critical analysis of beliefs, and hence a way to uncover and debunk false consciousness.9 In the quest for a creative, innovative workforce, successful firms seek out highly educated individuals and individuals from widely varying backgrounds. If a society is to support such innovation, it needs to support the education of individuals from all walks of life in order to maximize the potential for finding the uniquely creative individuals who will invent new technologies and new forms of life. But an inevitable byproduct of such broadly distributed education will be the creation of individuals capable of critical thinking, who question the fetishes of the current generation. In this way capitalism creates the conditions for trenchant critiques of capitalist fetishes, as well.

### Quality of Life

#### Capitalism improves quality of life

Allison 12 - American businessman, director at Moelis & Company, former CEO and president of the Cato Institute in Washington, D.C. (John A. Allison IV, “*The Financial Crisis and the Free Market Cure: Why Pure Capitalism is the World Economy’s Only Hope*”, Published September 2012, https://learning-oreilly-com.proxy.lib.umich.edu/library/view/The+Financial+Crisis+and+the+Free+Market+Cure:+Why+Pure+Capitalism+is+the+World+Economy's+Only+Hope/9780071806787/ch21.html#ch21)//IB

While neither taking advantage of others nor self-sacrifice is a rational alternative, there is an uncompromising moral code that underlies a free society and free markets. This moral code can best be described as the “trader principle.” Successful human relationships are about trading value for value—getting better together. In our business at BB&T, we are morally committed to doing our best to help our clients achieve economic success and financial security, because we expect to earn a profit while achieving this end. Of course, there are times when there are difficult trade-offs, and sometimes one of the parties does not keep his agreement. However, the goal is a mutually beneficial relationship in which both parties are better off because of the value-for-value trade. This very fundamental idea is why free markets create a better quality of life. Through voluntary trade, we all benefit. When government (or anyone with a “gun”) interferes in these voluntary trades, at least one party and sometimes both parties are worse off.

### Space Col

#### Capitalism is key to getting us off the rock.

Alex Knapp 20, writer at Forbes, 5/25/2020, "Elon Musk’s First Astronaut Launch Is One Giant Leap For Space Capitalism," https://www.forbes.com/sites/alexknapp/2020/05/25/elon-musks-first-astronaut-launch-is-one-giant-leap-for-space-capitalism/?sh=408fad182b49, Marsh

Even more significant: It’s the first time ever that astronauts will travel to orbit on a privately-owned spacecraft (previous space-tourism stunts have been either decidedly sub-orbital or provided by the Russian government). Behnken and Hurley will be hitching a ride on a Dragon capsule, launched by a Falcon 9 rocket, both designed and manufactured by Elon Musk-founded SpaceX. The pair will even be conveyed to the launch pad on Tesla-manufactured electric cars.

It’s a triumphant moment for Musk and his Hawthrone, California-based company. But this isn’t just a victory for one billionaire and one company. It’s a culmination of a decades-long effort to transform space into a new frontier of entrepreneurship.

“This is the same excitement I felt as a kid during the Apollo moon landings,” says Tom Zelibor, retired admiral and CEO of the Space Foundation, a nonprofit that advocates space exploration. “It’s inspiring opportunities for people who may not have thought of it before.”

During the Apollo program, putting Neil Armstrong on the Moon wasn’t just about technology or science. It was about the triumph of capitalism over communism. Or so the rhetoric went. Reality was different. Yes, the Apollo program was built by hundreds of private companies. But its development and direction was centralized by the federal government which spent an estimated $152 billion in today’s terms to put a man on the moon. Space would be the exclusive domain of big government through the space shuttle program in the 1980s.

This was galling to many space enthusiasts, whose passion was nurtured on science fiction stories by the likes of Robert Heinlein, who portrayed a future in space driven by capitalists. When the Cold War finally ended in 1991, entrepreneurial opportunities in the final frontier did finally begin to open up — ironically, within the former Soviet Union.

“It was the Russians that took the first steps in commercial services in space,” says Jeffrey Manber, a long-time space entrepreneur and CEO of Nanoracks. “Because of their economic collapse, they made a decision that their world-class markets — whether it was airplanes with Aeroflot, or the Bolshoi Ballet or space — had to stand on their own.”

Manber served in the Reagan Administration in the 1980s, where he’d helped to establish the Office of Space Commerce. In that role, he helped to secure the first commercial contract between the Soviet space agency and a U.S. company. His work in Russia continued after the Soviet Union fell, first by working with Russian space company Energia beginning in 1992.

The emergence of Russian space companies, which were building durable rockets at reasonable price tags, helped energize the marketplace. European and American firms, coddled by the military-industrial complex, pushed back by lobbying their governments to limit the number of Russian launches. A 1993 article of Forbes describing this response to the nascent Russian rocket industry wryly commented, “Isn’t competition good? Not to cartel members it isn’t.”

In 2000, Manber became the first CEO of MirCorp, a Netherlands-based company that took over operations of the Russian space station Mir. Though its tenure was short (the space station was de-orbited by the Russian government in March 2001), it still notched several firsts: the first privately funded cargo resupply, the first privately-funded crewed mission and the first space tourism contract.

Meanwhile, the U.S. saw a mini-boom of space entrepreneurs founding rocket companies. These efforts, however, frequently met with resistance from policymakers and legacy industry. Most ended in failure. “There were a lot of political and cultural barriers” to accepting space entrepreneurship in the United States at that time, says Manber.

One notable example of these efforts came from banker and billionaire Andrew Beal, who founded an aerospace company in 1996 with an aim to produce low-cost, reusable rockets. “It’s a big roll of the dice,” he told Forbes in April 2000. He was right. The luck ran out six months later when Beal shut down the company, citing the impossibility of competing with the government-subsidized aerospace industry.

Musk unveiled a combination of showmanship and execution reminiscent of Howard Hughes. In late 2003, for example, Musk “unveiled” his company’s early Falcon 1 rocket by shipping one across the country by truck, where it was parked in front of the Smithsonian Air and Space Museum. But that was after he’d already successfully tested its engines.

Another milestone for the industry was achieved in 2004 when SpaceShipOne, a spacecraft created by pioneering aerospace engineer Burt Rutan and his company Scaled Composites made two successful suborbital flights. That allowed Rutan to claim the $10 million Ansari XPRIZE, an incentive offered to spur development of private space vehicles. The technology was subsequently licensed by Sir Richard Branson for Virgin Galactic, which aims to fly tourists into space later this year.

Enthusiasm for private space efforts began to bubble up even in Washington D.C. In 2004, Congress passed legislation that helped clear a regulatory path for commercial launch companies. Shelli Brunswick, COO of the Space Foundation, which advocates for space exploration, credits this as a key foundation for SpaceX’s orbital launch this week. “It’s built on the right legislation, the right funding, the right policies over the last 20 years,” she says.

By 2005, NASA started changing the way it did business with the advent of its Commercial Orbital Transportation Services program. Championed by-then NASA Administrator Mike Griffin, this changed the way the agency did business. Rather than taking the lead on engineering and design, the space agency instead simply identified transportation capabilities and invited companies to offer bids on meeting them.

Since 2009, over $30 billion has been invested in over 530 separate space companies.

SpaceX seized the opportunity, winning a contract with NASA in 2006 that provided it with $278 million to develop its Falcon 9 rocket, which successfully launched for the first time in 2010. It signed a separate $1.6 billion contract with the space agency in 2008 to send cargo to the International Space Station, which it began fulfilling in 2012 when its Dragon capsule became the first private spacecraft to dock with the station.

One reason for this success, says Space Angels’ Anderson, is that legacy spacecraft companies didn’t pay much attention to the opportunity. “The big defense contractors didn’t think it was worth their time because the amounts were so small,” he says. “But for SpaceX, a young up and coming, venture-backed company, it was a big amount of money.”

he cultural shift sparked by NASA’s commercial cargo program helped lower other barriers for space entrepreneurs. Jeffrey Manber, for example, returned to the scene with a new company, Nanoracks, which in 2010 installed a research platform on the International Space Station, enabling customers to run experiments in space. In 2014, it installed a deployment system on the station that could be used to put small satellites into orbit.

As the decade moved on, SpaceX began offering launch services to other commercial customers such as telecommunications companies, at drastically lower prices than its competition (including the Russian rocket firms). Between SpaceX and Nanoracks, the cost to space quickly became drastically lower, opening new business opportunities.

“The private sector is now a full partner in opening the frontier of space.”

Jeffrey Manber, CEO of Nanoracks

One beneficiary of these opportunities was Planet, which deployed its first constellation of small satellites to take images of the Earth’s surface for things like oil and gas exploration in 2014. The satellites were launched to the ISS on a rocket under a NASA commercial cargo contract and propelled to orbit from Nanoracks deployment system. The San Francisco-based company now boasts a valuation of over $2.2 billion, according to Pitchbook.

Spurred on this success and others like it, investors have begun to flock to the commercial space sector. According to a report from Space Angels, since 2009 over $30 billion has been invested in over 530 separate space companies. There are several venture-backed space unicorns, including Planet, SpaceX and L.A.-based rocket manufacturer Rocket Lab.

Success with cargo convinced NASA to embrace a market-driven approach to returning human spaceflight to American soil. “The commercial space sector had really gained excellence in commercial and technical capability,” says Phil McAlister, NASA’s director of commercial spaceflight.

In 2014, NASA awarded contracts for crewed commercial space flights to two companies: Boeing, the aerospace stalwart that’s been working with NASA since the 1960s - and SpaceX. Combined, the two contracts are worth up to about $6.8 billion. “It was a huge shift in accountability and responsibility to the private sector, which is geared towards speed and cost-effectiveness. These are things that NASA is conscious of, but it’s not really in our core competencies,” McAlister chuckles.

This doesn’t mean that NASA is totally hands off in the development of either company’s spacecraft, McAlister says. But he sees it as a collaboration that combines the best of government expertise with that of the private sector. He acknowledges it hasn’t always been easy.

“This was a huge culture change for us to step back and say we’re going to give some of this control to the private sector,” he says. “And that was very, very difficult for NASA because we felt like we were the experts in this. I think that was the biggest challenge early on.”

For Jeffrey Manber, SpaceX sending astronauts to space “is the exclamation point” on the past few decades of entrepreneurship. “That’s what this mission is really going to bring home to the American public and the world,” he says. “That the private sector is now a full partner in opening the frontier of space.”

### Terrorism

#### A hefty dose of capitalism ends terrorism---recruitment is based for economic reasons that capitalism solves.

Hernando De Soto 14, not that Hernando De Soto, founder of the Institute for Liberty and Democracy in Peru and has written several books, 10/10/2014, "The Capitalist Cure for Terrorism," https://www.wsj.com/articles/the-capitalist-cure-for-terrorism-1412973796, Marsh

Today we hear the same economic and cultural pessimism about the Arab world that we did about Peru in the 1980s. But we know better. Just as Shining Path was beaten in Peru, so can terrorists be defeated by reforms that create an unstoppable constituency for rising living standards in the Middle East and North Africa.

To make this agenda a reality, the only requirements are a little imagination, a hefty dose of capital (injected from the bottom up) and government leadership to build, streamline and fortify the laws and structures that let capitalism flourish. As anyone who’s walked the streets of Lima, Tunis and Cairo knows, capital isn’t the problem—it is the solution.

Here’s the Peru story in brief: Shining Path, led by a former professor named Abimael Guzmán, attempted to overthrow the Peruvian government in the 1980s. The group initially appealed to some desperately poor farmers in the countryside, who shared their profound distrust of Peru’s elites. Mr. Guzmán cast himself as the savior of proletarians who had languished for too long under Peru’s abusive capitalists.

What changed the debate, and ultimately the government’s response, was proof that the poor in Peru weren’t unemployed or underemployed laborers or farmers, as the conventional wisdom held at the time. Instead, most of them were small entrepreneurs, operating off the books in Peru’s “informal” economy. They accounted for 62% of Peru’s population and generated 34% of its gross domestic product—and they had accumulated some $70 billion worth of real-estate assets.

This new way of seeing economic reality led to major constitutional and legal reforms. Peru reduced by 75% the red tape blocking access to economic activity, provided ombudsmen and mechanisms for filing complaints against government agencies and recognized the property rights of the majority. One legislative package alone gave official recognition to 380,000 informal businesses, thus bringing above board, from 1990 to 1994, some 500,000 jobs and $8 billion in tax revenue.

These steps left Peru’s terrorists without a solid constituency in the cities. In the countryside, however, they were relentless: By 1990, they had killed 30,000 farmers who had resisted being herded into mass communes. According to a Rand Corp. report, Shining Path controlled 60% of Peru and was poised to take over the country within two years.

Peru’s army knew that the farmers could help them to identify and defeat the enemy. But the government resisted making an alliance with the informal defense organizations that the farmers set up to fight back. We got a lucky break in 1991 when then-U.S. Vice President Dan Quayle, who had been following our efforts, arranged a meeting with President George H.W. Bush at the White House. “What you’re telling me,” the president said, “is that these little guys are really on our side.” He got it.

This led to a treaty with the U.S. that encouraged Peru to mount a popular armed defense against Shining Path while also committing the U.S. to support economic reform as an alternative to the terrorist group’s agenda. Peru rapidly fielded a much larger, mixed-class volunteer army—four times the army’s previous size—and won the war in short order. As Mr. Guzmán wrote at the time in a document published by Peru’s Communist Party, “We have been displaced by a plan designed and implemented by de Soto and Yankee imperialism.”

Looking back, what was crucial to this effort was our success in persuading U.S. leaders and policy makers, as well as key figures at the United Nations, to see Peru’s countryside differently: as a breeding ground not for Marxist revolution but for a new, modern capitalist economy. These new habits of mind helped us to beat back terror in Peru and can do the same, I believe, in the Middle East and North Africa. The stakes couldn’t be higher. The Arab world’s informal economy includes vast numbers of potential Islamic State recruits—and where they go, so goes the region.

It is widely known that the Arab Spring was sparked by the self-immolation in 2011 of Mohamed Bouazizi, a 26-year-old Tunisian street merchant. But few have asked why Bouazizi felt driven to kill himself—or why, within 60 days, at least 63 more men and women in Tunisia, Algeria, Morocco, Yemen, Saudi Arabia and Egypt also set themselves on fire, sending millions into the streets, toppling four regimes and leading us to today’s turmoil in the Arab world.

To understand why, my institute joined with Utica, Tunisia’s largest business organization, to put together a research team of some 30 Arabs and Peruvians, who fanned out across the region. Over the course of two years, we interviewed the victims’ families and associates, as well as a dozen other self-immolators who had survived their burns.

These suicides, we found, weren’t pleas for political or religious rights or for higher wage subsidies, as some have argued. Bouazizi and the others who burned themselves were extralegal entrepreneurs: builders, contractors, caterers, small vendors and the like. In their dying statements, none referred to religion or politics. Most of those who survived their burns and agreed to be interviewed spoke to us of “economic exclusion.” Their great objective was “ras el mel” (Arabic for “capital”), and their despair and indignation sprang from the arbitrary expropriation of what little capital they had.

Bouazizi’s plight as a small entrepreneur could stand in for the frustrations that millions of Arabs still face. The Tunisian wasn’t a simple laborer. He was a trader from age 12. By the time he was 19, he was keeping the books at the local market. At 26, he was selling fruits and vegetables from different carts and sites.

His mother told us that he was on his way to forming a company of his own and dreamed of buying a pickup truck to take produce to other retail outlets to expand his business. But to get a loan to buy the truck, he needed collateral—and since the assets he held weren’t legally recorded or had murky titles, he didn’t qualify.

Meanwhile, government inspectors made Bouazizi’s life miserable, shaking him down for bribes when he couldn’t produce licenses that were (by design) virtually unobtainable. He tired of the abuse. The day he killed himself, inspectors had come to seize his merchandise and his electronic scale for weighing goods. A tussle began. One municipal inspector, a woman, slapped Bouazizi across the face. That humiliation, along with the confiscation of just $225 worth of his wares, is said to have led the young man to take his own life.

Tunisia’s system of cronyism, which demanded payoffs for official protection at every turn, had withdrawn its support from Bouazizi and ruined him. He could no longer generate profits or repay the loans he had taken to buy the confiscated merchandise. He was bankrupt, and the truck that he dreamed of purchasing was now also out of reach. He couldn’t sell and relocate because he had no legal title to his business to pass on. So he died in flames—wearing Western-style sneakers, jeans, a T-shirt and a zippered jacket, demanding the right to work in a legal market economy.

I asked Bouazizi’s brother Salem if he thought that his late sibling had left a legacy. “Of course,” he said. “He believed the poor had the right to buy and sell.” As Mehdi Belli, a university information-technology graduate working as a merchant at a market in Tunis, told us, “We are all Mohamed Bouazizi.”

The people of the “Arab street” want to find a place in the modern capitalist economy. But hundreds of millions of them have been unable to do so because of legal constraints to which both local leaders and Western elites are often blind. They have ended up as economic refugees in their own countries.

To survive, they have cobbled together hundreds of discrete, anarchic arrangements, often called the “informal economy.” Unfortunately, that sector is viewed with contempt by many Arabs and by Western development experts, who prefer well-intended charity projects like providing mosquito nets and nutritional supplements.

But policy makers are missing the real stakes: If ordinary people in the Middle East and North Africa cannot play the game legally—despite their heroic sacrifices—they will be far less able to resist a terrorist offensive, and the most desperate among them may even be recruited to the jihadist cause.

Western experts may fail to see these economic realities, but they are increasingly understood in the Arab world itself, as I’ve learned from spending time there. At conferences throughout the region over the past year, I have presented our findings to business leaders, public officials and the press, showing how the millions of small, extralegal entrepreneurs like Bouazizi can change national economies.

For example, when the new president of Egypt, Abdel Fattah Al Sisi, asked us to update our numbers for his country, we discovered that the poor in Egypt get as much income from returns on capital as they do from salaries. In 2013, Egypt had about 24 million salaried citizens categorized as “workers.” They earned a total of some $21 billion a year but also owned about $360 billion of “dead” capital—that is, capital that couldn’t be used effectively because it exists in the shadows, beyond legal recognition.

For perspective: That amounts to roughly a hundred times more than what the West is going to give to Egypt this year in financial, military and development assistance—and eight times more than the value of all foreign direct investment in Egypt since Napoleon invaded more than 200 years ago.

Of course, Arab states even now have laws allowing assets to be leveraged or converted into capital that can be invested and saved. But the procedures for doing so are impenetrably cumbersome, especially for those who lack education and connections. For the poor in many Arab states, it can take years to do something as simple as validating a title to real estate.

At a recent conference in Tunisia, I told leaders, “You don’t have the legal infrastructure for poor people to come into the system.”

“You don’t need to tell us this,” said one businessman. “We’ve always been for entrepreneurs. Your prophet chased the merchants from the temple. Our prophet was a merchant!”

Many Arab business groups are keen for a new era of legal reform. In his much-discussed 2009 speech in Cairo, President Obama spoke of the deep American commitment to “the rule of law and the equal administration of justice.” But the U.S. has yet to get behind the agenda of legal and constitutional reform in the Arab world, and if the U.S. hesitates, lesser powers will too.

Washington should support Arab leaders who not only resist the extremism of the jihadists but also heed the call of Bouazizi and all the others who gave their lives to protest the theft of their capital. Bouazizi and those like him aren’t marginal people in the region’s drama. They are the central actors.

All too often, the way that Westerners think about the world’s poor closes their eyes to reality on the ground. In the Middle East and North Africa, it turns out, legions of aspiring entrepreneurs are doing everything they can, against long odds, to claw their way into the middle class. And that is true across all of the world’s regions, peoples and faiths. Economic aspirations trump the overhyped “cultural gaps” so often invoked to rationalize inaction.

As countries from China to Peru to Botswana have proved in recent years, poor people can adapt quickly when given a framework of modern rules for property and capital. The trick is to start. We must remember that, throughout history, capitalism has been created by those who were once poor.

I can tell you firsthand that terrorist leaders are very different from their recruits. The radical leaders whom I encountered in Peru were generally murderous, coldblooded, tactical planners with unwavering ambitions to seize control of the government. Most of their sympathizers and would-be recruits, by contrast, would rather have been legal economic agents, creating better lives for themselves and their families.

### War/terrorism

#### Cap solves war and terror

Krieger and Meierrieks 15 – Tim Krieger is a Professor of Constitutional Political Economy and Competition Policy at the University of Freiburg. Daniel Meierrieks is a Wilfried Guth Endowed Chair of Constitutional Political Economy and Competition Policy at the University of Freiburg (Tim and Daniel, “The rise of capitalism and the roots of anti-American terrorism,” Journal of Peace Research, Vol. 53, No. 1, JSTOR) //gordon

A number of **empiric**al contribution**s** have **found that capitalist countries are less likely to experience interstate and intrastate conflict** (e.g., Gartzke, 2007; De Soysa & Fjelde, 2010; for reviews of the literature see Schneider & Gleditsch, 2010; Schneider, 2014). They thus offer empirical support for the “peace-through-capitalism thesis” (Schneider & Gleditsch, 2010: 108). Importantly, these studies generally “equate ‘capitalism’ with free markets or smaller governments at home and abroad” (Mousseau et al., 2009: 80). Using this definition of capitalism, the “classical” capitalist peace literature offers several pathways through which capitalism may be conducive to peace. First, **economic openness** may stimulate economic growth and development, **consequently raising the opportunity costs of conflict** (Schneider, 2014). Second, openness creates economic **interdependencies,** e.g., through trade, capital movements or the international division of labor (Schneider, 2014). Such linkages make it less attractive to engage in conflict because the negative economic consequences of an attack are likely to backfire on the attacker. What is more, evidence by Hegre (2000) suggests that the beneficial effects of economic interdependence increase with the level of economic development (e.g., due to higher trade volumes and lower transaction costs), making it even less attractive for highly developed economies with open markets to attack each other.

In line with this discussion, we can hypothesize that capitalist economies—understood as economies with free and open (external) goods and capital markets—are also less likely to produce anti-American terrorism. In particular, it ought to be less likely that citizens or subnational (terrorist) groups from countries with similarly high levels of capitalist development **attack interests of the USA, the main proponent of modern capitalism**. We also expect foreign governments to be more reluctant to permit or even sponsor anti-American terrorism when their own economies are capitalistically organized. This is because there tends to be a close economic interdependence between the USA and other capitalist countries and the benefits associated with such interdependencies tend to be particularly large. Anti-American terrorism ought to be a particularly expensive venture when it originates from developed capitalist societies. This leads to our first hypothesis:

*Hypothesis (H1a): A higher level of external economic openness is associated with less anti- American terrorism (level-effect).*

### War

#### Capitalism solves war.

Zack Beauchamp 15, at Vox interviewing Stephen Pinker professor at Harvard, 6/4/2015, "Steven Pinker explains how capitalism is killing war," <https://www.vox.com/2015/6/4/8725775/pinker-capitalism>, Marsh

The idea that war is on the decline — that is, that there are fewer wars today and fewer people are dying from them than ever before — is hard for a lot of people to believe (including Republican presidential candidates).

And yet the data makes a very compelling case that that's true:

Those numbers were put together by Steven Pinker, a Harvard psychologist whose book The Better Angels of Our Nature makes the strongest case yet that the world is getting progressively more peaceful. Pinker's argument has come under fire recently, with some arguing that it's way too soon for anyone to say we've turned the corner from an era of war.

I spoke with Pinker this week to discuss some of the reasons why, specifically, he thinks the world has gotten so much safer, especially in the past 70 years. We talked about the idea that war just isn't as profitable as it used to be, why Vladimir Putin and ISIS seem to think differently, and what world leaders should do if they actually want to make sure the unprecedented peace of the past 70 years holds. What follows is a transcript of our conversation, lightly edited for length and clarity.

Zack Beauchamp: One story you hear from political scientists for why there's been less war recently that it's just less profitable —countries don't gain very much, economically or politically, from taking over new land anymore. Does that seem right to you?

Steven Pinker: Yes, it's one of the causes. It's the theory of the capitalist peace: when it's cheaper to buy things than to steal them, people don't steal them. Also, if other people are more valuable to you alive than dead, you're less likely to kill them. You don't kill your customers or your lenders, so the arrival of the infrastructure of trade and commerce reduces some of the sheer exploitative incentives of conquest.

This is an idea that goes back to the Enlightenment. Adam Smith and Montesquieu extolled it; it was on the minds of the founders when they built incentives for free trade into the Constitution.

I don't think it's the entire story of the decline in war. But I do think it's part of the story. There was a well-known study from Bruce Russett and John Oneal showing statistically that countries that engage in more trade are less likely to get into militarized disputes, and countries that are more integrated into the world economy are less likely to get into trouble with their neighbors.

ZB: Is it just that pairs of countries are trading with each more, or has something fundamentally changed about the global economy?

SP: It's both. Countries that trade with each other are less likely to pick fights with each other. Independently, individual countries that get more integrated into the global economy are less likely to make trouble.

### Selfishness

#### Capitalism doesn’t cause selfishness, deceit, or exploitation – it discourages it

Allison 12 - American businessman, director at Moelis & Company, former CEO and president of the Cato Institute in Washington, D.C. (John A. Allison IV, “*The Financial Crisis and the Free Market Cure: Why Pure Capitalism is the World Economy’s Only Hope*”, Published September 2012, https://learning-oreilly-com.proxy.lib.umich.edu/library/view/The+Financial+Crisis+and+the+Free+Market+Cure:+Why+Pure+Capitalism+is+the+World+Economy's+Only+Hope/9780071806787/ch21.html#ch21)//IB

It is important to understand what acting selfishly really requires. The proper goal is acting in our long-term rational self-interest, properly understood. Unfortunately, we are constantly presented with a false set of alternatives. These alternatives are to take advantage of other people or to sacrifice ourselves. Neither of these options makes sense.

Many people define being selfish as taking advantage of other people. Taking advantage of other people is not selfish; it is self-destructive for two reasons. First, if you attempt to mislead other people, soon no one will trust you. Without trust, you will not be successful. You might fool Tom and Jane, but fairly soon they will tell Dick and Harry, and no one will trust you. Without trust, your relationships with others will not be successful or generate happiness.

At a deeper level, attempting to manipulate people’s minds is very self-destructive. Other people’s psychology is often a complicated mess. When you let go of the truth (the facts) in an effort to distort someone else’s reality, you do psychological damage to yourself.

In my role as CEO of a large public company, I have had the opportunity to meet many financially successful people. I have never met anyone who was both financially successful and happy who achieved this result primarily by taking advantage of other people. I have met a few people who were financially successful who, I believe, achieved this result based on some level of deceit. These are the unhappiest people I have ever met.

Of course, other people’s consciousness exists independent of you, and you often want to influence other people’s beliefs. However, when you let go of reality, when you distort the truth to convince others, you do more damage to your own mind than you do to them. Attempting to take advantage of others is not selfish. It is self-destructive.

## AMR

#### 2] No extinction from pandemics

* Death rates as high as 50% didn’t collapse civilization
* Fossil fuel record caps risk at .1% per century
* health, sanitation, medicine, science, public health bodies, solve
* viruses can’t survive in all locations
* refugee populations like tribes, remote researchers, submarine crews, solve

Ord 20 Ord, Toby. Toby David Godfrey Ord (born 18 July 1979) is an Australian philosopher. He founded Giving What We Can, an international society whose members pledge to donate at least 10% of their income to effective charities and is a key figure in the effective altruism movement, which promotes using reason and evidence to help the lives of others as much as possible.[3] He is a Senior Research Fellow at the University of Oxford's Future of Humanity Institute, where his work is focused on existential risk. BA in Phil and Comp Sci from Melbourne, BPhil in Phil from Oxford, PhD in Phil from Oxford. The precipice: existential risk and the future of humanity. Hachette Books, 2020.

Are we safe now from events like this? Or are we more vulnerable? Could a pandemic threaten humanity’s future?10 The Black Death was not the only biological disaster to scar human history. It was not even the only great bubonic plague. In 541 CE the Plague of Justinian struck the Byzantine Empire. Over three years it took the lives of roughly 3 percent of the world’s people.11 When Europeans reached the Americas in 1492, the two populations exposed each other to completely novel diseases. Over thousands of years each population had built up resistance to their own set of diseases, but were extremely susceptible to the others. The American peoples got by far the worse end of exchange, through diseases such as measles, influenza and especially smallpox. During the next hundred years a combination of invasion and disease took an immense toll—one whose scale may never be known, due to great uncertainty about the size of the pre-existing population. We can’t rule out the loss of more than 90 percent of the population of the Americas during that century, though the number could also be much lower.12 And it is very difficult to tease out how much of this should be attributed to war and occupation, rather than disease. As a rough upper bound, the Columbian exchange may have killed as many as 10 percent of the world’s people.13 Centuries later, the world had become so interconnected that a truly global pandemic was possible. Near the end of the First World War, a devastating strain of influenza (known as the 1918 flu or Spanish Flu) spread to six continents, and even remote Pacific islands. At least a third of the world’s population were infected and 3 to 6 percent were killed.14 This death toll outstripped that of the First World War, and possibly both World Wars combined. Yet even events like these fall short of being a threat to humanity’s longterm potential.15 In the great bubonic plagues we saw civilization in the affected areas falter, but recover. The regional 25 to 50 percent death rate was not enough to precipitate a continent-wide collapse of civilization. It changed the relative fortunes of empires, and may have altered the course of history substantially, but if anything, it gives us reason to believe that human civilization is likely to make it through future events with similar death rates, even if they were global in scale. The 1918 flu pandemic was remarkable in having very little apparent effect on the world’s development despite its global reach. It looks like it was lost in the wake of the First World War, which despite a smaller death toll, seems to have had a much larger effect on the course of history.16 It is less clear what lesson to draw from the Columbian exchange due to our lack of good records and its mix of causes. Pandemics were clearly a part of what led to a regional collapse of civilization, but we don’t know whether this would have occurred had it not been for the accompanying violence and imperial rule. The strongest case against existential risk from natural pandemics is the fossil record argument from Chapter 3. Extinction risk from natural causes above 0.1 percent per century is incompatible with the evidence of how long humanity and similar species have lasted. But this argument only works where the risk to humanity now is similar or lower than the longterm levels. For most risks this is clearly true, but not for pandemics. We have done many things to exacerbate the risk: some that could make pandemics more likely to occur, and some that could increase their damage. Thus even “natural” pandemics should be seen as a partly anthropogenic risk. Our population now is a thousand times greater than over most of human history, so there are vastly more opportunities for new human diseases to originate.17 And our farming practices have created vast numbers of animals living in unhealthy conditions within close proximity to humans. This increases the risk, as many major diseases originate in animals before crossing over to humans. Examples include HIV (chimpanzees), Ebola (bats), SARS (probably bats) and influenza (usually pigs or birds).18 Evidence suggests that diseases are crossing over into human populations from animals at an increasing rate.19 Modern civilization may also make it much easier for a pandemic to spread. The higher density of people living together in cities increases the number of people each of us may infect. Rapid long-distance transport greatly increases the distance pathogens can spread, reducing the degrees of separation between any two people. Moreover, we are no longer divided into isolated populations as we were for most of the last 10,000 years.20 Together these effects suggest that we might expect more new pandemics, for them to spread more quickly, and to reach a higher percentage of the world’s people. But we have also changed the world in ways that offer protection. We have a healthier population; improved sanitation and hygiene; preventative and curative medicine; and a scientific understanding of disease. Perhaps most importantly, we have public health bodies to

facilitate global communication and coordination in the face of new outbreaks. We have seen the benefits of this protection through the dramatic decline of endemic infectious disease over the last century (though we can’t be sure pandemics will obey the same trend). Finally, we have spread to a range of locations and environments unprecedented for any mammalian species. This offers special protection from extinction events, because it requires the pathogen to be able to flourish in a vast range of environments and to reach exceptionally isolated populations such as uncontacted tribes, Antarctic researchers and nuclear submarine crews. 21 It is hard to know whether these combined effects have increased or decreased the existential risk from pandemics. This uncertainty is ultimately bad news: we were previously sitting on a powerful argument that the risk was tiny; now we are not. But note that we are not merely interested in the direction of the change, but also in the size of the change. If we take the fossil record as evidence that the risk was less than one in 2,000 per century, then to reach 1 percent per century the pandemic risk would need to be at least 20 times larger. This seems unlikely. In my view, the fossil record still provides a strong case against there being a high extinction risk from “natural” pandemics. So most of the remaining existential risk would come from the threat of permanent collapse: a pandemic severe enough to collapse civilization globally, combined with civilization turning out to be hard to re-establish or bad luck in our attempts to do so.

#### 3] Superbug impact is hype

**Tyson 12**{Greg, syndicated science columnist, PhD student in microbiology (Northwestern), “Tipping Point: The Threat of Antibiotic Resistance,” Helix, 8/17, http://helix.northwestern.edu/article/tipping-point-threat-antibiotic-resistance}

What happens if we stand pat? We won’t return to the Middle Ages, where plague wiped out one third of Europe’s population. The truth is that many of the most dangerous and widespread bacterial pathogens that truly deserve the moniker “superbug” have been tamed, especially in the United States. This is because for the healthy person, pathogens like MRSA are not an immediate threat. But people hospitalized and already sick with other conditions are in danger of contracting bacterial infections we are sometimes powerless to treat. It truly is a shame that we are constantly making medical advances in other fields, but have taken a step back in this area. Some potential solutions include treating infections with multiple antibiotics and offering greater incentives for the pharmaceutical industry to produce these products. Also, more specific therapies directed at toxins the bacteria produce could be used in conjunction with antibiotics to more effectively control infections. Stories about MRSA as a “superbug” are often overblown, causing unnecessary panic among people unlikely to get sick**.** Nevertheless, it rightfully draws attention to a public health problem that requires new solutions. The appropriate response is concern and action. But if we continue to ignore the problem, it can only get worse.

#### 4] Interconnectedness is balanced by increased immunity and advances in medicine and sanitation

Dr. John Halstead 19, Doctorate in Political Philosophy, “Cause Area Report: Existential Risk, Founders Pledge”, https://founderspledge.com/research/Cause%20Area%20Report%20-%20Existential%20Risk.pdf

However, there are some reasons to think that naturally occurring pathogens are unlikely to cause human extinction. Firstly, Homo sapiens have been around for 200,000 years and the Homo genus for around six million years without being exterminated by an infectious disease, which is evidence that the base rate of extinction-risk natural pathogens is low.82 Indeed, past disease outbreaks have not come close to rendering humans extinct. Although bodies were piled high in the streets across Europe during the Black Death,83 human extinction was never a serious possibility, and some economists even argue that it was a boon for the European economy.84 Secondly, infectious disease has only contributed to the extinction of a small minority of animal species.85 The only confirmed case of a mammalian species extinction being caused by an infectious disease is a type of rat native only to Christmas Island. Having said that, the context may be importantly different for modern day humans, so it is unclear whether the risk is increasing or decreasing. On the one hand, due to globalisation, the world is more interconnected making it easier for pathogens to spread. On the other hand, interconnectedness could also increase immunity by increasing exposure to lower virulence strains between subpopulations.87 Moreover, advancements in medicine and sanitation limit the potential damage an outbreak might do.

#### 5] Humans are too dispersed and disease trends against lethality

Sebastian Farquhar 17, director at Oxford's Global Priorities Project, Owen Cotton-Barratt, a Lecturer in Mathematics at St Hugh’s College, Oxford, John Halstead, Stefan Schubert, Haydn Belfield, Andrew Snyder-Beattie, "Existential Risk Diplomacy and Governance", GLOBAL PRIORITIES PROJECT 2017, 1/23/2017, https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf

1.1.3 Engineered pandemics For most of human history, natural pandemics have posed the greatest risk of mass global fatalities.37 However, there are some reasons to believe that natural pandemics are very unlikely to cause human extinction. Analysis of the International Union for Conservation of Nature (IUCN) red list database has shown that of the 833 recorded plant and animal species extinctions known to have occurred since 1500, less than 4% (31 species) were ascribed to infectious disease.38 None of the mammals and amphibians on this list were globally dispersed, and other factors aside from infectious disease also contributed to their extinction. It therefore seems that our own species, which is very numerous, globally dispersed, and capable of a rational response to problems, is very unlikely to be killed off by a natural pandemic. One underlying explanation for this is that highly lethal pathogens can kill their hosts before they have a chance to spread, so there is a selective pressure for pathogens not to be highly lethal. Therefore, pathogens are likely to co-evolve with their hosts rather than kill all possible hosts.39

#### Large-scale diseases solve nuclear war---it’s likely now.

Barry. R. Posen 20. Ford International Professor of Political Science at MIT and Director Emeritus of the MIT Security Studies Program. 4/23/2020. “Do Pandemics Promote Peace?” https://www.foreignaffairs.com/articles/china/2020-04-23/do-pandemics-promote-peace. DOA: 9/2/2020. SIR.

As the novel coronavirus infects the globe, states compete for scientific and medical supplies and blame one another for the pandemic’s spread. Policy analysts have started asking whether such tensions could eventually erupt into military conflict. Has the pandemic increased or decreased the motive and opportunity of states to wage war? War is a risky business, with potentially very high costs. The historian Geoffrey Blainey argued in The Causes of War that most wars share a common characteristic at their outset: optimism. The belligerents usually start out sanguine about their odds of military success. When elites on both or all sides are confident, they are more willing to take the plunge—and less likely to negotiate, because they think they will come out better by fighting. Peace, by contrast, is served by pessimism. Even one party’s pessimism can be helpful: that party will be more inclined to negotiate and even accept an unfavorable bargain in order to avoid war. When one side gains a sudden and pronounced advantage, however, this de-escalatory logic can break down: the optimistic side will increase its demands faster than the pessimistic side can appease. Some analysts worry that something like this could happen in U.S.-Chinese relations as a result of the new coronavirus. The United States is experiencing a moment of domestic crisis. China, some fear, might see the pandemic as playing to its advantage and be tempted to throw its military weight around in the western Pacific. What these analysts miss is that COVID-19, the disease caused by the coronavirus, is weakening all of the great and middle powers more or less equally. None is likely to gain a meaningful advantage over the others. All will have ample reason to be pessimistic about their military capabilities and their overall readiness for war. For the duration of the pandemic, at least, and probably for years afterward, the odds of a war between major powers will go down, not up. PAX EPIDEMICA? A cursory survey of the scholarly literature on war and disease appears to confirm Blainey’s observation that pessimism is conducive to peace. Scholars have documented again and again how war creates permissive conditions for disease—in armies as well as civilians in the fought-over territories. But one seldom finds any discussion of epidemics causing wars or of wars deliberately started in the middle of widespread outbreaks of infectious disease. (The diseases that European colonists carried to the New World did weaken indigenous populations to the point that they were more vulnerable to conquest; in addition, some localized conflicts were fought during the influenza pandemic of 1919–21, but these were occasioned by major shifts in regional balances of power following the destruction of four empires in World War I.) That sickness slows the march to war iis partly due to the fact that war depends on people. When people fall ill, they can’t be counted on to perform well in combat. Military medicine made enormous strides in the years leading up to World War I, prior to which armies suffered higher numbers of casualties from disease than from combat. But pandemics still threaten military units, as those onboard U.S. and French aircraft carriers, hundreds of whom tested positive for COVID-19, know well. Sailors and soldiers in the field are among the most vulnerable because they are packed together. But even airmen are at risk, since they must take refuge from air attacks in bunkers, where the virus could also spread rapidly. Ground campaigns in urban areas pose still greater dangers in pandemic times. Much recent ground combat has been in cities in poor countries with few or no public health resources, environments highly favorable to illness. Ground combat also usually produces prisoners, any of whom can be infected. A vaccine may eventually solve these problems, but an abundance of caution is likely to persist for some time after it comes into use. Major outbreaks damage national economies, which are the source of military power. The most important reason disease inhibits war is economic. Major outbreaks damage national economies, which are the source of military power. COVID-19 is a pandemic—by definition a worldwide phenomenon. All great and middle powers appear to be adversely affected, and all have reason to be pessimistic about their military prospects. Their economies are shrinking fast, and there is great uncertainty about when and how quickly they will start growing again. Even China, which has slowed the spread of the disease and begun to reopen its economy, will be hurting for years to come. It took an enormous hit to GDP in the first quarter of 2020, ending 40 years of steady growth. And its trading partners, burned by their dependence on China for much of the equipment needed to fight COVID-19, will surely scale back their imports. An export-dependent China will have to rely more on its domestic market, something it has been attempting for years with only limited success. It is little wonder, then, that the International Monetary Fund forecasts slower growth in China this year than at any time since the 1970s. Even after a vaccine is developed and made widely available, economic troubles may linger for years. States will emerge from this crisis with enormous debts. They will spend years paying for the bailout and stimulus packages they used to protect citizens and businesses from the economic consequences of social distancing. Drained treasuries will give them one more reason to be pessimistic about their military might. LESS TRADE, LESS FRICTION How long is the pacifying effect of pessimism likely to last? If a vaccine is developed quickly, enabling a relatively swift economic recovery, the mood may prove short-lived. But it is equally likely that the coronavirus crisis will last long enough to change the world in important ways, some of which will likely dampen the appetite for conflict for some time—perhaps up to five or ten years. After all, the world is experiencing both the biggest pandemic and the biggest economic downturn in a century. Most governments have not covered themselves with glory managing the pandemic, and even the most autocratic worry about popular support. Over the next few years, people will want evidence that their governments are working to protect them from disease and economic dislocation. Citizens will see themselves as dependent on the state, and they will be less inclined to support adventures abroad. At the same time, governments and businesses will likely try to reduce their reliance on imports of critical materials, having watched global supply chains break down during the pandemic. The result will probably be diminished trade, something liberal internationalists see as a bad thing. But for the last five years or so, trade has not helped improve relations between states but rather fueled resentment. Less trade could mean less friction between major powers, thereby reducing the intensity of their rivalries. In the Chinese context, less international trade could have positive knock-on effects. Focused on growing the domestic economy, and burdened by hefty bills from fighting the virus, Beijing could be forced to table the Belt and Road Initiative, an ambitious trade and investment project that has unnerved the foreign policy establishments of great and middle powers. The suspension of the BRI would soothe the fears of those who see it as an instrument of Chinese world domination. Interstate wars have become relatively rare since the end of World War II. The United States and the Soviet Union engaged in a four-decade Cold War, which included an intense nuclear and conventional arms race, but they never fought each other directly, even with conventional weapons. Theorists debate the reasons behind the continued rarity of great-power conflict. I am inclined to believe that the risk of escalation to a nuclear confrontation is simply too great. COVID-19 does nothing to mitigate such risks for world leaders—and a great deal to feed their reasonable pessimism about the likely outcome of even a conventional war.

#### Disease pandemics decrease the likelihood of war

Walt 20 (Stephen M. Walt is the Robert and Renée Belfer professor of international relations at Harvard University; “Will a Global Depression Trigger Another World War?”; Foreign Policy; May 13, 2020; https://foreignpolicy.com/2020/05/13/coronavirus-pandemic-depression-economy-world-war/; ERB)

By many measures, 2020 is looking to be the worst year that humankind has faced in many decades. We’re in the midst of a pandemic that has already claimed more than 280,000 lives, sickened millions of people, and is certain to afflict millions more before it ends. The world economy is in free fall, with unemployment rising dramatically, trade and output plummeting, and no hopeful end in sight. A plague of locusts is back for a second time in Africa, and last week we learned about murderous killer wasps threatening the bee population in the United States. Americans have a head-in-the-sand president who prescribes potentially lethal nostrums and ignores the advice of his scientific advisors. Even if all those things magically disappeared tomorrow—and they won’t—we still face the looming long-term danger from climate change. Given all that, what could possibly make things worse? Here’s one possibility: war. It is therefore worth asking whether the combination of a pandemic and a major economic depression is making war more or less likely. What does history and theory tell us about that question? For starters, we know neither plague nor depression make war impossible. World War I ended just as the 1918-1919 influenza was beginning to devastate the world, but that pandemic didn’t stop the Russian Civil War, the Russo-Polish War, or several other serious conflicts. The Great Depression that began in 1929 didn’t prevent Japan from invading Manchuria in 1931, and it helped fuel the rise of fascism in the 1930s and made World War II more likely. So if you think major war simply can’t happen during COVID-19 and the accompanying global recession, think again. But war could still be much less likely. The Massachusetts Institute of Technology’s Barry Posen has already considered the likely impact of the current pandemic on the probability of war, and he believes COVID-19 is more likely to promote peace instead. He argues that the current pandemic is affecting all the major powers adversely, which means it isn’t creating tempting windows of opportunity for unaffected states while leaving others weaker and therefore vulnerable. Instead, it is making all governments more pessimistic about their short- to medium-term prospects. Because states often go to war out of sense of overconfidence (however misplaced it sometimes turns out to be), pandemic-induced pessimism should be conducive to peace. Moreover, by its very nature war requires states to assemble lots of people in close proximity—at training camps, military bases, mobilization areas, ships at sea, etc.—and that’s not something you want to do in the middle of a pandemic. For the moment at least, beleaguered governments of all types are focusing on convincing their citizens they are doing everything in their power to protect the public from the disease. Taken together, these considerations might explain why even an impulsive and headstrong warmaker like Saudi Arabia’s Mohammed bin Salman has gotten more interested in winding down his brutal and unsuccessful military campaign in Yemen. Posen adds that COVID-19 is also likely to reduce international trade in the short to medium term. Those who believe economic interdependence is a powerful barrier to war might be alarmed by this development, but he points out that trade issues have been a source of considerable friction in recent years—especially between the United States and China—and a degree of decoupling might reduce tensions somewhat and cause the odds of war to recede. For these reasons, the pandemic itself may be conducive to peace. But what about the relationship between broader economic conditions and the likelihood of war? Might a few leaders still convince themselves that provoking a crisis and going to war could still advance either long-term national interests or their own political fortunes? Are the other paths by which a deep and sustained economic downturn might make serious global conflict more likely? One familiar argument is the so-called diversionary (or “scapegoat”) theory of war. It suggests that leaders who are worried about their popularity at home will try to divert attention from their failures by provoking a crisis with a foreign power and maybe even using force against it. Drawing on this logic, some Americans now worry that President Donald Trump will decide to attack a country like Iran or Venezuela in the run-up to the presidential election and especially if he thinks he’s likely to lose. This outcome strikes me as unlikely, even if one ignores the logical and empirical flaws in the theory itself. War is always a gamble, and should things go badly—even a little bit—it would hammer the last nail in the coffin of Trump’s declining fortunes. Moreover, none of the countries Trump might consider going after pose an imminent threat to U.S. security, and even his staunchest supporters may wonder why he is wasting time and money going after Iran or Venezuela at a moment when thousands of Americans are dying

# War Defense

## No War

#### No War – democracies, economies, laws and institutions, MAD, and pacifism

Fettweis 17 [Christopher J. Fettweis (2017) Unipolarity, Hegemony, and the New Peace, Security Studies, 26:3, 423-451, DOI: 10.1080/09636412.2017.1306394] \*\*\*cite recommended by author

The publication of Pinker’s The Better Angels of Our Nature in 2011 brought the New Peace into popular consciousness to some degree, but general recognition remains rather low. The data might suggest that the world is much safer, but Americans know better: a 2009 poll found that nearly 60 percent of the public—and fully half of the membership of the elite Council on Foreign Relations—actually considered the world more dangerous than it was during the Cold War.20 Among academic and policy experts, however, the phenomenon is well known, if controversial, and a debate over potential explanations has been raging for some time. A number of major and minor factors have been cited over the years that might help account for the New Peace. First, nuclear weapons came into existence about the same time that the great powers stopped fighting one another, which a number of scholars suggest is no coincidence.21 Faith in the pacifying effect of nuclear weapons led a few prominent realists to suggest that an efficient way to spread stability would be to encourage controlled proliferation to non-nuclear states.22 This idea found little purchase. Instead, proliferation momentum slowed considerably after the end of the Cold War: the world has the same number of nuclear states in 2016 that it did in 1991 (eight), having lost one (South Africa) and gained another (North Korea). Perhaps that number is sufficient to generate widespread fear of generalized war and overall systemic stability. Second, modern integrated markets contain powerful incentives for peace. While economic considerations are not the only ones that looms, to the extent that they affect decisions, in this post mercantilist age they do so in a uniformly pacific direction. In the 1970s, neoliberal institutionalists argued that modern levels of economic interdependence provide strong incentives for states to resolve disputes peacefully.23 It is almost always in the interest of states today, if they are rational and self-interested, to cooperate rather than run the risk of ruining their economies, and those of their main trading partners, with war. The globalization of production, as Stephen G. Brooks has argued, is a powerful force for stability among those countries that benefit from the actions of multinational corporations.24 Furthermore, today’s highly mobile investment dollars flee instability, providing strong incentives for states to settle both external and internal disputes peacefully. As Secretary of State Colin Powell once told a Ugandan audience, “money is a coward.” 25 Overall, globalization has been accompanied by an evolution in the way national wealth is accumulated. The major industrial powers, and perhaps many of their less developed neighbors, seem to have reached the rather revolutionary conclusion that territory is not directly related to national power and prestige.26 Third, the new peace has risen alongside the number of democracies in the world. While the widely tested and debated democratic peace theory is not universally accepted in the field, the hundreds of books and articles that have been written on the subject over the past thirty years have been sufficient to convince many that democracies rarely fight one another.27 Since most of today’s great powers practice some form of democracy, perhaps it should be unsurprising that conflict has been absent in the global north. Fourth, a number of scholars have suggested that regimes, law, and institutions shape state behavior, and can serve to inhibit aggression.28 Some major theorists of the New Peace, including both Andrew Mack and Joshua S. Goldstein, give UN peacekeeping primary credit for the decline in warfare.29 At the very least, there is convincing evidence that wars do not recur with the same frequency as in the past, a phenomenon for which the UN can certainly take a degree of credit. These potential explanations suffer from the same general weakness: stability exists where the influence of their independent variable is weak or absent. There are no nuclear states in Central or South America, for example, but those regions have been virtually free of interstate war for many decades. The relative decline of civil wars and ethnic conflict around the globe since the end of the Cold War also is not a product of nuclear deterrence. The democratic peace theory might help explain why there have been no intra-West wars, but it cannot account for the pacific trends among and within nondemocratic states. Africa and other areas of the Global South are also experiencing historically low levels of armed conflict, which suggests that economic growth and interdependence might not be the sole determinants of peaceful choices by leaders.30 With many of these potential explanations, there is another problem: the direction of causality is not clear. It is just as plausible to suggest that peace preceded, and then abetted, the rise of the other factors.31 Democracy and economic growth might be the results of stability, rather than the other way around. The rise in peacekeeping has only been possible because of increased great power cooperation. These phenomena may well be related, but just not in the way that their proponents suggest. A number of other explanations have been proposed. Pinker discussed a series of “rights revolutions,” especially including those of children and women that, in addition to several other factors, may well have contributed to the decline of war.32 Others have suggested that demographics may be playing a decisive role, either through aging populations or declining birthrates in the Global North.33 Finally, perhaps the most prominent explanation for the decline of war integrates all of the above, suggesting that they contribute to a change in the way people view conflict itself. Together states must weigh when war these factors may have combined to alter the way people think about warfare, removing the romance and glory and replacing it with revulsion and dishonor. Ideas, when widely held, can become norms that shape and limit state behavior.34 There is yet another potential explanation, one that is far more common in the policy community than in scholarship. The possibility that the United States is essentially responsible for the New Peace, either through its military power or the institutional order it created, is the subject of the rest of this paper.

## No GPW

#### Nuclear deterrence works – escalatory situations always de-escalate – no irrational actor theory

Tepperman, 9 [Jonathan, Editor in Chief of Foreign Policy magazine, 8/28/09, “HOW NUCLEAR WEAPONS CAN KEEP YOU SAFE”, Newsweek, Accessed at: https://www.newsweek.com/how-nuclear-weapons-can-keep-you-safe-78907] KKL

A growing and compelling body of research suggests that nuclear weapons may not, in fact, make the world more dangerous, as Obama and most people assume. The bomb may actually make us safer. In this era of rogue states and transnational terrorists, that idea sounds so obviously wrongheaded that few politicians or policymakers are willing to entertain it. But that's a mistake. Knowing the truth about nukes would have a profound impact on government policy. Obama's idealistic campaign, so out of character for a pragmatic administration, may be unlikely to get far (past presidents have tried and failed). But it's not even clear he should make the effort. There are more important measures the U.S. government can and should take to make the real world safer, and these mustn't be ignored in the name of a dreamy ideal (a nuke-free planet) that's both unrealistic and possibly undesirable. The argument that nuclear weapons can be agents of peace as well as destruction rests on two deceptively simple observations. First, nuclear weapons have not been used since 1945. Second, there's never been a nuclear, or even a nonnuclear, war between two states that possess them. Just stop for a second and think about that: it's hard to overstate how remarkable it is, especially given the singular viciousness of the 20th century. As Kenneth Waltz, the leading "nuclear optimist" and a professor emeritus of political science at UC Berkeley puts it, "We now have 64 years of experience since Hiroshima. It's striking and against all historical precedent that for that substantial period, there has not been any war among nuclear states." To understand why—and why the next 64 years are likely to play out the same way—you need to start by recognizing that all states are rational on some basic level. Their leaders may be stupid, petty, venal, even evil, but they tend to do things only when they're pretty sure they can get away with them. Take war: a country will start a fight only when it's almost certain it can get what it wants at an acceptable price. Not even Hitler or Saddam waged wars they didn't think they could win. The problem historically has been that leaders often make the wrong gamble and underestimate the other side—and millions of innocents pay the price. Nuclear weapons change all that by making the costs of war obvious, inevitable, and unacceptable. Suddenly, when both sides have the ability to turn the other to ashes with the push of a button—and everybody knows it—the basic math shifts. Even the craziest tin-pot dictator is forced to accept that war with a nuclear state is unwinnable and thus not worth the effort. As Waltz puts it, "Why fight if you can't win and might lose everything?" Why indeed? The iron logic of deterrence and mutually assured destruction is so compelling, it's led to what's known as the nuclear peace: the virtually unprecedented stretch since the end of World War II in which all the world's major powers have avoided coming to blows. They did fight proxy wars, ranging from Korea to Vietnam to Angola to Latin America. But these never matched the furious destruction of full-on, great-power war (World War II alone was responsible for some 50 million to 70 million deaths). And since the end of the Cold War, such bloodshed has declined precipitously. Meanwhile, the nuclear powers have scrupulously avoided direct combat, and there's very good reason to think they always will. There have been some near misses, but a close look at these cases is fundamentally reassuring—because in each instance, very different leaders all came to the same safe conclusion. Take the mother of all nuclear standoffs: the Cuban missile crisis. For 13 days in October 1962, the United States and the Soviet Union each threatened the other with destruction. But both countries soon stepped back from the brink when they recognized that a war would have meant curtains for everyone. As important as the fact that they did is the reason why: Soviet leader Nikita Khrushchev's aide Fyodor Burlatsky said later on, "It is impossible to win a nuclear war, and both sides realized that, maybe for the first time." The record since then shows the same pattern repeating: nuclear-armed enemies slide toward war, then pull back, always for the same reasons. The best recent example is India and Pakistan, which fought three bloody wars after independence before acquiring their own nukes in 1998. Getting their hands on weapons of mass destruction didn't do anything to lessen their animosity. But it did dramatically mellow their behavior. Since acquiring atomic weapons, the two sides have never fought another war, despite severe provocations (like Pakistani-based terrorist attacks on India in 2001 and 2008). They have skirmished once. But during that flare-up, in Kashmir in 1999, both countries were careful to keep the fighting limited and to avoid threatening the other's vital interests. Sumit Ganguly, an Indiana University professor and coauthor of the forthcoming India, Pakistan, and the Bomb, has found that on both sides, officials' thinking was strikingly similar to that of the Russians and Americans in 1962. The prospect of war brought Delhi and Islamabad face to face with a nuclear holocaust, and leaders in each country did what they had to do to avoid it. Nuclear pessimists—and there are many—insist that even if this pattern has held in the past, it's crazy to rely on it in the future, for several reasons. The first is that today's nuclear wannabes are so completely unhinged, you'd be mad to trust them with a bomb. Take the sybaritic Kim Jong Il, who's never missed a chance to demonstrate his battiness, or Mahmoud Ahmadinejad, who has denied the Holocaust and promised the destruction of Israel, and who, according to some respected Middle East scholars, runs a messianic martyrdom cult that would welcome nuclear obliteration. These regimes are the ultimate rogues, the thinking goes—and there's no deterring rogues. But are Kim and Ahmadinejad really scarier and crazier than were Stalin and Mao? It might look that way from Seoul or Tel Aviv, but history says otherwise. Khrushchev, remember, threatened to "bury" the United States, and in 1957, Mao blithely declared that a nuclear war with America wouldn't be so bad because even "if half of mankind died … the whole world would become socialist." Pyongyang and Tehran support terrorism—but so did Moscow and Beijing. And as for seeming suicidal, Michael Desch of the University of Notre Dame points out that Stalin and Mao are the real record holders here: both were responsible for the deaths of some 20 million of their own citizens. Yet when push came to shove, their regimes balked at nuclear suicide, and so would today's international bogeymen. For all of Ahmadinejad's antics, his power is limited, and the clerical regime has always proved rational and pragmatic when its life is on the line. Revolutionary Iran has never started a war, has done deals with both Washington and Jerusalem, and sued for peace in its war with Iraq (which Saddam started) once it realized it couldn't win. North Korea, meanwhile, is a tiny, impoverished, family-run country with a history of being invaded; its overwhelming preoccupation is survival, and every time it becomes more belligerent it reverses itself a few months later (witness last week, when Pyongyang told Seoul and Washington it was ready to return to the bargaining table). These countries may be brutally oppressive, but nothing in their behavior suggests they have a death wish.

#### No risk of great power war – the US is the reigning hegemon and international institutions and nuclear weapons check

Hammond, 18 [Andrew, Associate at the Centre for the Study of International Affairs at the London School of Economics, 11/25/18, “Why another great power war is unlikely soon” Gulf News, Accessed at: <https://search-proquest-com.proxy.lib.umich.edu/docview/1989400586/E17CD756E9B44D22PQ/2?accountid=14667>] KKL

These risks are real and significant. However, there are key differences today with the world of 1914 which, in the absence of catastrophic miscalculation, makes a major power war unlikely for the foreseeable future. This is not least because memories of the First and indeed Second World Wars, linger powerfully. With justification, the First World War was described as the 'greatest seminal catastrophe' of the 20th century by U.S. diplomat George Kennan, who would later become the architect for the U.S. Cold War 'containment strategy." Aside from the many millions who died from 1914 to 1918, the war set in chain several developments which blighted the world for decades to come. These include the emergence of Communism in Russia and - as numerous historians assert - the rise of Nazi Germany and the seeds of the Second World War. Another major difference between now and 1914 is the presence of nuclear weapons which, as during the Cold War, generally serve as a brake on major power conflict. It is noteworthy here that both revisionist nations, including China and Russia, as well as 'status-quo powers," such as the United States and France, that possess nuclear arsenals. A further fundamental change is that, unlike 1914, there is now a dense web of post-war international institutions, especially the United Nations, which continue to have significant resilience and legitimacy decades after their creation. While these bodies are imperfect, and in need of reform, the fact remains that they have generally enabled international security, especially with five of the key powers all on the U.N. Security Council. Moreover, the relative balance between the two leading powers today is different in 2014 than 1914. That is, the gap between the United States and China is greater today than that between the United Kingdom and Germany 100 years ago. Indeed, perhaps the biggest consequence of the First World War was the dawn of the 'American Century" in which the United States emerged as the world's most powerful nation. To be sure, the country has undergone relative decline, and China is forecast to become the largest economy in the world this year based on purchasing power parity data. However, the United States remains significantly ahead of China on most measures of national strength, including military might, and is likely to enjoy an overall advantage for years. Indeed, unlike the United Kingdom in the 20th century, there are indications that U.S. power will remain resilient for decades to come, buoyed by factors such as the country's 'energy revolution" which has far-reaching geopolitical consequences. Taken overall, the prospect of a major power war for the foreseeable future is not as high as in 1914. The relative global balance of power is different today, partly because of the resilience of U.S. power. Moreover, nuclear weapons and international institutions generally act as a restraining force against major conflict that did not exist 100 years ago.

## No Nuke War

#### Risk of nuclear war is extremely low – there are barriers and checks against unilateral action, misinterpretation and technical errors

Dealie and Mauroni 15 [Mel, associate professor at the Air Command and Staff College, PhD in American History from UNC-Chapel Hill, and Al, Director of the U.S. Air Force Center for Strategic Deterrence Studies at Maxwell Air Force Base, Alabama, “The Need for Nuclear Alerts,” 5/6/15, War on the Rocks, accessed at: <https://warontherocks.com/2015/05/the-need-for-nuclear-alerts/>] KKL

While nuclear-alerted missiles provide strategic stability, the argument against them continues to rest on deliberate falsehoods. The first involves the false notion of a “hair-trigger.” The second is that a high-alert status opens the door to a nuclear accident or incident. And the third is that high-alert makes it far more likely that a misinterpretation between world leaders or military forces could lead to a nuclear exchange. All three arguments are full of holes. There is no “hair-trigger” alert. The U.S. military has maintained an unblemished safety record for 25 years.\* And constant communications between the United States and Russia dramatically reduce the possibility of such misinterpretations. What Hair-Trigger? One of the arguments presented against alert is that these missiles are on a “hair-trigger” — a term used seven times in the Global Zero report. This gives the impression that missiles stand at the ready and all a launch officer has to do is press some red button and nuclear Armageddon occurs. As Gen. Cartwright understands better than almost anyone, this is utterly ridiculous. First, the president is the only person authorized to order the release of a nuclear weapon. The suggestion that the president has less than a few minutes to make a decision for a full-out strategic response based on a tenuous launch warning is a straw man. There is no demand for the president to make a decision within minutes — if there is any doubt, the decision could be to wait until there is clear evidence prior to any retaliation. Secondly, no one individual can launch a nuclear missile. As with all things in nuclear operations, two people must give consent (aside from, of course, the president) before an action can occur. No one person has knowledge of all nuclear codes; therefore, an insider threat is mitigated. Furthermore, crews are directed by relatively short encrypted messages. While the notion of hacking into the nuclear command and control system would make for a great Hollywood movie, the truth is that all messages go through sophisticated levels of encryption so it would be impossible to duplicate an actual message. While the ICBM force has had some bad press recently, none of the infractions ever compromised the integrity of the launch codes or the nuclear command structure. The Global Zero report states that the risk of the outbreak of nuclear conflict has not decreased proportionally with the significant reductions of nuclear weapons since the height of the Cold War. They insist that a “hair-trigger” alert could result in a nuclear exchange during this period of high acrimony on the international stage. By doing so, they ignore geopolitical context. While tensions between the United States and Russia are undoubtedly higher than we’d like, we are not facing anything approaching the massive competition for global dominance that was the Cold War and the tensions that came along with it. This argument and the others advanced by Global Zero commission reveal their effort as just another excuse for taking nuclear weapon systems offline. The Accident Red Herring Another Global Zero argument for eliminating the ICBMs and returning non-strategic nuclear weapons to the United States is that it would reduce nuclear incidents or accidents. (An accident would be an unexpected error due to a failure of procedures such as an unauthorized launch or the loss of a nuclear weapon. An incident would be an intentional hostile event involving a nuclear weapon, facility, or component.) This is a red herring. There have been 32 known “broken arrows” (accidents involving nuclear weapons) in the history of nuclear operations. The majority of these accidents involved aircraft carrying nuclear weapons, and a majority of those occurred in the 1960s when Strategic Air Command was flying airborne alert. A significant accident happened in 1980 when a dropped wrench socket hit a fuel line that eventually caused a liquid-fueled rocket to explode and jettison the nuclear warhead some 600 feet downrange. Today’s nuclear weapons are much more safe and secure than during the Cold War. The U.S. nuclear arsenal has no liquid-fueled rockets (they are all solid fuel) and no bombers flying on alert loaded with nuclear bombs. Misinterpreting Misinterpretations Finally, those who would de-alert the nuclear force claim that the slightest misinterpretation could lead to a nuclear exchange. History refutes this claim as well. During the Cold War, bomber and reconnaissance aircraft routinely penetrated the airspace of both sides. This was a commonly-accepted practice to test resolve, prod air defenses, and to signal displeasure with current policy or practices. Even today, Russian bombers enter U.S. and European airspace and U.S. reconnaissance planes loiter on the boundaries of Russia. The United States sends its B-2 Spirit bombers to Europe and Southeast Asia to demonstrate political resolve. It did not lead to nuclear war in the past and it will not in the future, because political and military leaders recognize this for what it is — strategic messaging, not acts of war. During the early days of George W. Bush’s administration, a Chinese fighter aircraft ran into a U.S. reconnaissance aircraft forcing it to land on Hainan Island. While this was an international incident between two nuclear-weapon states, it did not lead to nuclear war or even a change in the nuclear posture of both countries. Additionally, previous misinterpretations of launches did not lead to a nuclear exchange because both sides understand the importance of strategic context. Some like to claim a false target on a radar screen, a fly landing on the scope, or some other fanciful scenario might happen that could cause an unauthorized nuclear first strike. The Dr. Strangelove scenario of a Gen. Jack Ripper launching the nuclear fleet on an attack to preserve the United States’ “purity of essence” makes for great entertainment but is hardly based on fact. As noted above, the president is the only person who can authorize a U.S. nuclear release and constant communications between the United States and Russia (through the White House “hot line,” the Nuclear Risk Reduction Center, the State Department, and the United Nations) work to prevent such scenarios.

### No Miscalc

#### It's science fiction – miscalc and resulting escalation is impossible – empirics, technology

Quinlan, 9 [Sir Michael, former British defence strategist, former Permanent Under-Secretary of State at the British Ministry of Defense, Professor @ Wimbledon College and Merton College, Oxford. Director of the Ditchley Foundation, Thinking About Nuclear Weapons: Principles, Problems, Prospects, 2009, Pg. 63-69, Google Books] KKL

Even if initial nuclear use did not quickly end the fighting, the supposition of inexorable momentum in a developing exchange, with each side rushing to overreaction amid confusion and uncertainty, is implausible. It fails to consider what the situation of the decisionmakers would really be. Neither side could want escalation. Both would be appalled at what was going on. Both would be desperately looking for signs that the other was ready to call a halt. Both, given the capacity for evasion or concealment which modern delivery platforms and vehicles can possess, could have in reserve significant forces invulnerable enough not to entail use-or-lose pressures. (It may be more open to question, as noted earlier, whether newer nuclear-weapon possessors can be immediately in that position; but it is within reach of any substantial state with advanced technological capabilities, and attaining it is certain to be a high priority in the development of forces.) As a result, neither side can have any predisposition to suppose, in an ambiguous situation of fearful risk, that the right course when in doubt is to go on copiously launching weapons. And none of this analysis rests on any presumption of highly subtle or pre-concerted rationality. The rationality required is plain. The argument is reinforced if we consider the possible reasoning of an aggressor at a more dispassionate level. Any substantial nuclear armoury can inflict destruction outweighing any possible prize that aggression could hope to seize. A state attacking the possessor of such an armoury must therefore be doing so (once given that it cannot count upon destroying the armoury pre-emptively) on a judgement that the possessor would be found lacking in the will to use it. If the attacked possessor used nuclear weapons, whether first or in response to the aggressor's own first use, this judgement would begin to look dangerously precarious. There must be at least a substantial possibility of the aggressor leaders' concluding that their initial judgement had been mistaken—that the risks were after all greater than whatever prize they had been seeking, and that for their own country's survival they must call off the aggression. Deterrence planning such as that of NATO was directed in the first place to preventing the initial misjudgement and in the second, if it were nevertheless made, to compelling such a reappraisal. The former aim had to have primacy, because it could not be taken for granted that the latter was certain to work. But there was no ground for assuming in advance, for all possible scenarios, that the chance of its working must be negligible. An aggressor state would itself be at huge risk if nuclear war developed, as its leaders would know. It may be argued that a policy which abandons hope of physically defeating the enemy and simply hopes to get him to desist is pure gamble, a matter of who blinks first; and that the political and moral nature of most likely aggressors, almost ex hypothesis, makes them the less likely to blink. One response to this is to ask what is the alternative—it can only be surrender. But a more positive and hopeful answer lies in the fact that the criticism is posed in a political vacuum. Real-life conflict would have a political context. The context which concerned NATO during the cold war, for example, was one of defending vital interests against a postulated aggressor whose own vital interests would not be engaged, or would be less engaged. Certainty is not possible, but a clear asymmetry of vital interest is a legitimate basis for expecting an asymmetry, credible to both sides, of resolve in conflict. That places upon statesmen, as page 23 has noted, the key task in deterrence of building up in advance a clear and shared grasp of where limits lie. That was plainly achieved in cold-war Europe. 11 vital interests have been defined in a way that is clear, and also clearly not overlapping or incompatible with those of the adversary, a credible basis has been laid for the likelihood of greater resolve in resistance. It was also sometimes suggested by critics that whatever might be indicated by theoretical discussion of political will and interests, the military environment of nuclear warfare—particularly difficulties of communication and control—would drive escalation with overwhelming probability to the limit. But it is obscure why matters should be regarded as inevitably so for every possible level and setting of action. Even if the history of war suggested (as it scarcely does) that military decision-makers are mostly apt to work on the principle 'When in doubt, lash out', the nuclear revolution creates an utterly new situation. The pervasive reality, always plain to both sides during the cold war, is 'If this goes on to the end, we are all ruined'. Given that inexorable escalation would mean catastrophe for both, it would be perverse to suppose them permanently incapable of framing arrangements which avoid it. As page 16 has noted, NATO gave its military commanders no widespread delegated authority, in peace or war, to launch nuclear weapons without specific political direction. Many types of weapon moreover had physical safeguards such as PALs incorporated to reinforce organizational ones. There were multiple communication and control systems for passing information, orders, and prohibitions. Such systems could not be totally guaranteed against disruption if at a fairly intense level of strategic exchange—which was only one of many possible levels of conflict— an adversary judged it to be in his interest to weaken political control. It was far from clear why he necessarily should so judge. Even then, however, it remained possible to operate on a general fail-safe presumption: no authorization, no use. That was the basis on which NATO operated. If it is feared that the arrangements which a nuclear-weapon possessor has in place do not meet such standards in some respects, the logical course is to continue to improve them rather than to assume escalation to be certain and uncontrollable, with all the enormous inferences that would have to flow from such an assumption. The likelihood of escalation can never be 100 per cent, and never zero. Where between those two extremes it may lie can never be precisely calculable in advance; and even were it so calculable, it would not be uniquely fixed—it would stand to vary hugely with circumstances. That there should be any risk at all of escalation to widespread nuclear war must be deeply disturbing, and decision-makers would always have to weigh it most anxiously. But a pair of key truths about it need to be recognized. The first is that the risk of escalation to large-scale nuclear war is inescapably present in any significant armed conflict between nuclear-capable powers, whoever may have started the conflict and whoever may first have used any particular category of weapon. The initiator of the conflict will always have physically available to him options for applying more force if he meets effective resistance. If the risk of escalation, whatever its degree of probability, is to be regarded as absolutely unacceptable, the necessary inference is that a state attacked by a substantial nuclear power must forgo military resistance. It must surrender, even if it has a nuclear armoury of its own. But the companion truth is that, as page 47 has noted, the risk of escalation is an inescapable burden also upon the aggressor. The exploitation of that burden is the crucial route, if conflict does break out, for managing it to a tolerable outcome—the only route, indeed, intermediate between surrender and holocaust, and so the necessary basis for deterrence beforehand. The working out of plans to exploit escalation risk most effectively in deterring potential aggression entails further and complex issues. It is for example plainly desirable, wherever geography, politics, and available resources so permit without triggering arms races, to make provisions and dispositions that are likely to place the onus of making the bigger and more evidently dangerous steps in escalation upon the aggressor who wishes to maintain his attack, rather than upon the defender. (The customary shorthand for this desirable posture used to be 'escalation dominance'.) These issues are not further discussed here. But addressing them needs to start from acknowledgement that there are in any event no certainties or absolutes available, no options guaranteed to be risk-free and cost-free. Deterrence is not possible without escalation risk; and its presence can point to no automatic policy conclusion save for those who espouse outright pacifism and accept its consequences. Accident and Miscalculation Ensuring the safety and security of nuclear weapons plainly needs to be taken most seriously. Detailed information is understandably not published, but such direct evidence as there is suggests that it always has been so taken in every possessor state, with the inevitable occasional failures to follow strict procedures dealt with rigorously. Critics have nevertheless from time to time argued that the possibility of accident involving nuclear weapons is so substantial that it must weigh heavily in the entire evaluation of whether war-prevention structures entailing their existence should be tolerated at all. Two sorts of scenario are usually in question. The first is that of a single grave event involving an unintended nuclear explosion—a technical disaster at a storage site, for example, or the accidental or unauthorized launch of a delivery system with a live nuclear warhead. The second is that of some event—perhaps such an explosion or launch, or some other mishap such as malfunction or misinterpretation of radar signals or computer systems—initiating a sequence of response and counter-response that culminated in a nuclear exchange which no one had truly intended. No event that is physically possible can be said to be of absolutely zero probability (just as at an opposite extreme it is absurd to claim, as has been heard from distinguished figures, that nuclear-weapon use can be guaranteed to happen within some finite future span despite not having happened for over sixty years). But human affairs cannot be managed to the standard of either zero or total probability. We have to assess levels between those theoretical limits and weigh their reality and implications against other factors, in security planning as in everyday life. There have certainly been, across the decades since 1945, many known accidents involving nuclear weapons, from transporters skidding off roads to bomber aircraft crashing with or accidentally dropping the weapons they carried (in past days when such carriage was a frequent feature of readiness arrangements—it no longer is). A few of these accidents may have released into the nearby environment highly toxic material. None however has entailed a nuclear detonation. Some commentators suggest that this reflects bizarrely good fortune amid such massive activity and deployment over so many years. A more rational deduction from the facts of this long experience would however be that the probability of any accident triggering a nuclear explosion is extremely low. It might be further noted that the mechanisms needed to set off such an explosion are technically demanding, and that in a large number of ways the past sixty years have seen extensive improvements in safety arrangements for both the design and the handling of weapons. It is undoubtedly possible to see respects in which, after the cold war, some of the factors bearing upon risk may be new or more adverse; but some are now plainly less so. The years which the world has come through entirely without accidental or unauthorized detonation have included early decades in which knowledge was sketchier, precautions were less developed, and weapon designs were less ultra-safe than they later became, as well as substantial periods in which weapon numbers were larger, deployments more widespread and diverse, movements more frequent, and several aspects of doctrine and readiness arrangements more tense. Similar considerations apply to the hypothesis of nuclear war being mistakenly triggered by false alarm. Critics again point to the fact, as it is understood, of numerous occasions when initial steps in alert sequences for US nuclear forces were embarked upon, or at least called for, by indicators mistaken or misconstrued. In none of these instances, it is accepted, did matters get at all near to nuclear launch—extraordinary good fortune again, critics have suggested. But the rival and more logical inference from hundreds of events stretching over sixty years of experience presents itself once more: that the probability of initial misinterpretation leading far towards mistaken launch is remote. Precisely because any nuclear-weapon possessor recognizes the vast gravity of any launch, release sequences have many steps, and human decision is repeatedly interposed as well as capping the sequences. To convey that because a first step was prompted the world somehow came close to accidental nuclear war is wild hyperbole, rather like asserting, when a tennis champion has lost his opening service game, that he was nearly beaten in straight sets. History anyway scarcely offers any ready example of major war started by accident even before the nuclear revolution imposed an order-of-magnitude increase in caution. It was occasionally conjectured that nuclear war might be triggered by the real but accidental or unauthorized launch of a strategic nuclear-weapon delivery system in the direction of a potential adversary. No such launch is known to have occurred in over sixty years. The probability of it is therefore very low. But even if it did happen, the further hypothesis of its initiating a general nuclear exchange is far-fetched. It fails to consider the real situation of decision-makers, as pages 63-4 have brought out. The notion that cosmic holocaust might be mistakenly precipitated in this way belongs to science fiction.

## A2 China War

### 1NC --- Long China Turn

#### 2020 was a key point for China to build up its military, but tech challenges put China on the brink of complete military superiority

**McLeary 9/1** (Patrick, 2020, *McLeary* has written about national security issues for Foreign Policy, Defense News, The New Republic, Columbia Journalism Review and elsewhere.) BreakingDefense - “China Is Ahead in Ship, Missile & Air Defense Tech: DoD Report” - <https://breakingdefense.com/2020/09/china-is-ahead-in-ship-missile-air-defense-tech-dod-report/> ///twl

WASHINGTON: The Chinese military has already pushed ahead of the US in areas like shipbuilding, missile defense, ballistic and cruise missile construction, the Pentagon warned today in a blunt new assessment. One of the consistent themes of the annual China Military Power report is that much of the Chinese modernization effort remains a work in progress. The People’s Liberation Army, or PLA, is an “increasingly modern and flexible force” that relies on China’s civilian industrial might and its robust tech sector to drive improvements to build a force aimed at rivaling the US military by mid-century. As part of that push, the PLA is moving forward on its own nuclear triad, recently revealing the new H-6N as its first nuclear-capable air-to-air refuelable bomber, giving Beijing land, sea and air-deliverable nuclear weapons for the first time. China is expected to double the number of its nuclear warheads over the next decade to around 400, the Pentagon analysis says, a key reason the Trump administration has been so eager to include — albeit unsuccessfully — China in arms control talks along with Russia. While China has so far refused to discuss the issue, the American estimate of 200-odd nuclear warheads currently in the Chinese stockpile marks the first time the US has publicly estimated the number of Chinese nuclear capabilities, a signal of Washington’s growing unease. Even with that expected growth, of course, China’s nuclear force would still be dwarfed by the estimated 3,800 US warheads in active and reserve status. The nuclear modernization is just part of a larger effort, however. Underpinning the entire military buildup is the blending of the Chinese civilian and military industrial bases and tech innovation sector — driven by its Military-Civil Fusion Development Strategy — which allows the military to pick the best and most fully developed technologies for its own use. There’s “not a clear line between the PRC’s civilian and military economies, raising due diligence costs for U.S. and global entities that do not desire to contribute to the PRC’s military modernization,” the report states. The Deputy Assistant Defense Secretary for China, Chad Sbragia, said at an American Enterprise Institute event today that the Chinese military is “not intended to be merely a showpiece of Chinese modernity” but is a tool for the government to press its advantage diplomatically around the globe. “The Communist Party has spent the last several years completely tearing out and rewiring the PLA organizationally with the goal of transforming into a joint force that is more combat ready, innovative and global,” Sbragia said. Critical to this is the Military-Civil Fusion Development Strategy, which the Pentagon tellingly spends some time detailing in today’s report. “We’re looking internally to my headquarters, as well as here at Peterson, to bring some of our great allies and partners into our staff and into our operations and processes here at the Combatant Command level as well,” said SPACECOM head Gen. James Dickinson. It is meant to link “China’s defense industrial base and its civilian technology and industrial base,” the report states, while “integrating and leveraging science and technology innovations across military and civilian sectors.” By blending military and civilian expertise and knowledge, the PLA has built a system which inserts military requirements into civilian infrastructure, and includes “all relevant aspects of its society and economy for use in competition and war.” Those structural advantages have led the Pentagon to conclude that China has already achieved parity with—or even exceeded—the United States in several areas, including shipbuilding. The Chinese navy is already the largest in the world, with about 350 ships and submarines. While it has never been tested in combat and cannot claim to be a blue water navy yet since it has rarely strayed too far from its home ports. The Pentagon is also concerned about China’ 1,250 ground-launched ballistic and cruise missiles, with ranges between 500 and 5,500 kilometers. The US currently fields a single type of conventional ground-based ballistic missile with a range of 70 to 300 kilometers and no ground launched cruise missiles. The PLA also “has one of the world’s largest forces of advanced long-range surface-to-air systems,” the report notes, including Russian-built S-400s, S-300s, and domestically produced systems. Given the alarming assessment, Sbragia cautioned today that “the report does not claim that China’s military is currently 10 feet tall, nor, I think, certainly does China either. It clearly faces a number of challenges, and Beijing is working to overcome those, which is really an important point.”

#### US-Sino war inevitable – modernization of Chinese indefensible aircraft carriers and space weaponization coming now

**Gertz 14** – Lecturer on defense & national security (Bill Gertz, “China Military Buildup Shifts Balance of Power in Asia in Beijing’s Favor”, The Washington Free Beacon, 10/13/2014, http://freebeacon.com/national-security/china-military-buildup-shifts-balance-of-power-in-asia-in-beijings-favor/)//MBB

China’s decades-long buildup of strategic and conventional military forces is shifting the balance of power in Asia in Beijing’s favor and **increasing** the **risk of a conflict**, according to a forthcoming report by a congressional China commission. China’s military has greatly expanded its air and naval forces and is sharply increasing its missile forces, even while adopting a more hostile posture against the United States and regional allies in Asia, states a late draft of the annual report of the bipartisan U.S.-China Economic and Security Review Commission. As a result, “the potential for security miscalculation in the region is rising,” the report said, using the euphemism for a conflict or shootout between Chinese forces and U.S. forces or those of its regional allies. The report paints an alarming picture of China’s growing aggressiveness and expanding power, including development of two new stealth jets, the first deployment of a naval expeditionary amphibious group to the Indian Ocean, and aerial bombing exercises held in Kazakhstan. China’s communist government also views the United States as its main adversary—**despite strong trade and financial links between the two countries**, the report says. The commission report—to be released in final form in November—concludes that the war-footing-like buildup by the People’s Liberation Army is increasing the risk that a conflict will break out between the United States and China. A copy of the draft report was obtained by the Washington Free Beacon. “China’s rapid military modernization is altering the military balance of power in the Asia Pacific in ways that could engender destabilizing security competition between other major nearby countries, such as Japan and India, and exacerbate regional hotspots such as Taiwan, the Korean Peninsula, the East China Sea, and the South China Sea,” the report concludes in a section on military developments With declining U.S. defense spending and cuts in forces, the balance of power in Asia “is shifting in China’s favor,” the report says. The report warns that China’s communist leaders are fueling nationalist tensions amid concerns about declining economic growth and increasing social unrest. “Promoting a sense of grievance among the Chinese people and creating diversionary tensions in the region would carry real risks of escalation and create the potential for the United States to be drawn into a regional conflict,” the report says. The high-technology weapons and other capabilities China is fielding also pose a growing threat to America’s ability to deter regional conflicts, defend allies and maintain open and secure air and sea-lanes. As China builds up its naval power, the U.S. Navy is declining, and the current American ability to defeat China in a conflict will be difficult to maintain, the report says. **By 2020, China is expected to have 342 submarines and missile-firing warships deployed, many of them equipped with advanced weapons. By comparison, the total U.S. naval forces will be 243 ships and submarines in 2020.** Recent Chinese provocations in sea and aerial encounters also are a signs the two nations could become embroiled in a conflict. “China already has initiated dangerous encounters at sea on several occasions,” the report said, noting the near-aerial collision between a Chinese interceptor jet and a Navy P-8 reconnaissance aircraft. Rick Fisher, a China military affairs analyst, said the congressional report augments a sometimes-deficient Pentagon annual assessment of the Chinese military. “The China Commission is hitting its stride concerning China’s growing military challenge, offering the Congress an expansive and multi-dimensional assessment of that challenge not offered by the Pentagon’s annual China Military Power reports,” said Fisher, with the International Assessment and Strategy Center. Fisher credits the commission for highlighting the shift in the balance of power that he said is linked to China’s growth in air and space power. “**The regional balance of power shift in China’s favor is based on well documented analysis and should be required reading for anyone concerned with China’s growing ability to threaten U.S. interests in Asia,” he said.** The report also confirms that China twice this year tested a new, ultra-high speed strategic strike vehicle called the Wu-14. When deployed, the Wu-14 will give the Chinese military the capability of attacking any target on earth in as little as “minutes to hours,” the report says. The hypersonic vehicle tests were first disclosed by the Free Beacon in January and August. A super fast strike vehicle that glides to its targets of speeds of up to nearly 8,000 miles per hour could be deployed by 2020 and a similar high-speed scramjet powered hypersonic attack vehicle could be fielded before 2025, the report says. “Hypersonic glide vehicles could render existing U.S. missile defense systems less effective and potentially obsolete,” the report says. On China’s strategic nuclear buildup, the report identifies China’s large-scale buildup of both conventional and nuclear-armed missiles as a serious threat. China’s has as many as 1,895 ballistic and cruise missiles, including up to 1,200 short-range missiles, up to 100 medium-range missiles, up to 20 intermediate-range missiles, up to 75 intercontinental missiles, and up to 500 ground-launched land attack cruise missiles. The Pentagon after 2010 halted releasing annual assessments of Chinese missile forces that one expert said undercuts the Obama administration’s policy of seeking a more open Chinese military by “indirectly assisting Chinese secrecy.” For short-range missiles, China currently is developing five new systems with ranges between 94 and 174 miles. The new missiles will have greater accuracy and lethality. For targeting U.S. forces in Japan and South Korea, China has deployed DF-21C theater-range missiles with ranges of about 1,240 miles and appears to have developed a second system, the DF-16. Its new intermediate-range missile, to be deployed in the next five years, will be able to hit U.S. forces on Guam, Northern Australia, Alaska, and U.S. forces in the Middle East and Indian Ocean. A variant of the DF-21D is a unique anti-ship ballistic missile that has been deployed in two brigades in southeastern and northeast China. China’s nuclear strike forces remain couched in secrecy, the report said. “China’s official statements about its nuclear forces and nuclear capabilities are rare and vague in order to maintain ‘strategic ambiguity,’” the report says. The commission report faults the Pentagon for ending its practice of providing details of China’s nuclear arsenal in annual reports to Congress, saying the omission is contributing to Chinese military secrecy. The Pentagon has not released an assessment of Chinese nuclear forces since 2006 when it said China had more than 100 warheads. Current estimates by non-government analysts place the number of Chinese nuclear warheads as from 250 to as many as 3,000. “Despite the uncertainty surrounding China’s stockpiles of nuclear missiles and nuclear warheads, it is clear that China’s nuclear forces over the next three to five years will expand considerably and become more lethal and survivable with the fielding of additional road-mobile nuclear missiles; the integration of as many as five [Jin-class missile submarines], each of which can carry 12 JL-2 submarine-launched ballistic missiles; and the introduction of intercontinental ballistic missiles armed with multiple independently targetable reentry vehicles,” the report says. China also is modernizing its silo-based nuclear missiles, along with hardening storage facilities, launch sites, and transportation networks. The network of some 3,000 miles of underground nuclear facilities is also being expanded, the report states. China currently has deployed five road-mobile long-range missiles, and one submarine-launched ballistic missile, the JL-2, with a new JL-3 missile planned for 2020. The newest system is the DF-41 ICBM that is expected to be deployed as early as next year with up to 10 multiple nuclear warheads. The DF-41’s range of about 7,456 miles is sufficient “to target the entire continental United States,” the report states. The Free Beacon first disclosed Oct. 2 that China flight-tested a sixth road-mobile ICMB, the DF-31B. The test appeared to take place after the cutoff date of June for most information in the commission report. The report also includes the graphic published in China’s state-run Global Times in November revealing that a Chinese submarine-launched ballistic missile attack on the United States could kill 5 million to 12 million people. China’s space warfare programs also are expanding significantly, according to the report. “**The PLA is pursuing a broad counterspace program to challenge U.S.** **information superiority in a conflict and disrupt or destroy U.S. satellites if necessary**,” the report said. Recent missile tests indicate Chinese anti-satellite weapons can destroy both low-altitude and high-altitude satellites, including strategic Global Positioning System satellites and communications and intelligence orbiters. “China likely will be able to hold at risk U.S. national security satellites in every orbital regime in the next five to ten years,” the report says. The report also revealed China last year conducted a space test of three small, maneuvering satellites, one of which is capable of grabbing and destroying orbiting satellites. To counter the Chinese military buildup, the commission recommends that Congress increase funding for naval deployments in Asia; continue three-a-year production of Virginia-class submarines; develop an unmanned Navy carrier strike aircraft; fund a new long-range anti-ship missile; and build ship-based directed energy arms. The commission also wants Congress to direct the Pentagon to provide more details on China’s conventional and nuclear missiles and warheads. On China’s cyber espionage activities, the report said China’s government has been engaged in “large-scale” cyber attacks against U.S. networks, including defense and private company systems. Among the data stolen by Chinese hackers were details of U.S. weapons systems including Patriot anti-missile defenses, the F-35 and F-18 jets, P-8 reconnaissance aircraft, Global Hawk drones, Black Hawk helicopters, Aegis ballistic missile defenses, and the Littoral Combat ship. The Chinese military also obtained secrets on defense technologies, including know-how related to directed energy weapons, drone video systems, technical data links, satellite communications, electronic warfare systems, and electromagnetic aircraft launch systems. “In addition to stealing the designs of these weapon systems and technologies, China’s cyber actors targeted internal communications, program schedules, meeting minutes, and human resource records, among other documents,” the report said. The Obama administration policy of not responding forcefully to Chinese cyber attacks is not working, the report says, despite the federal indictment in May of five Chinese military hackers. “China’s material incentives for continuing this activity are immense and unlikely to be altered by small-scale U.S. actions,” the report says. Other key findings of the report include: Chinese President Xi Jinping has made China’s missile forces the “core strength” strategic deterrence. Chinese defense spending will continue to fund an acceleration of the military modernization for the next five years. **A** U.S. defense analyst said China’s efficient defense spending could render U.S. aircraft carriers difficult to defend**.** China could build 1,127 DF-21D anti-ship ballistic missiles for the cost of one U.S. aircraft carrier at $13.5 billion. China is using the estimated 235,000 Chinese students studying in the United States to conduct technology collection for the Beijing government. Joint ventures between Chinese and U.S. companies include a legal requirement for the Chinese firms to share technology with the Chinese military and intelligence services.

#### Goes nuclear – ASATs destroy the rules of modern warfighting

**Gallagher 15 [Nancy**, interim director of the Center for International and Security Studies in Maryland, previous Executive Director of the Clinton Administration’s  CTBT Treaty Committee, an arms control specialist at the State Dept., and a faculty member at Wesleyan, “Antisatellite warfare without nuclear risk: A mirage,” May 29, Bulletin of Atomic Scientists, <http://thebulletin.org/space-weapons-and-risk-nuclear-exchanges8346>]

In recent decades, however, as space-based reconnaissance, communication, and targeting **capabilities have become integral** elements of modern military **op**eration**s**, strategists and policy makers have explored whether carrying out **a**nti**sat**ellite attacks could confer major military advantages without increasing the **risk of nuclear war**. In theory, the answer might be yes. In practice, it is almost **certainly no.** Hyping threats. No country has ever deliberately and destructively attacked a satellite belonging to another country (though nations have sometimes interfered with satellites' radio transmissions). But the United States, Russia, and China have all tested advanced kinetic antisatellite weapons, and the United States has demonstrated that it can modify a missile-defense interceptor for use in antisatellite mode. Any nation that can launch nuclear weapons on medium-range ballistic missiles has the latent capability to attack satellites in low Earth orbit. Because the United States depends heavily on space for its terrestrial military superiority, some US strategists have predicted that potential adversaries will try to neutralize US advantages by attacking satellites. They have also recommended that the US military do everything it can to protect its own space assets while maintaining a capability to disable or destroy satellites that adversaries use for intelligence, communication, navigation, or targeting. Analysis of this sort often exaggerates both potential adversaries’ ability to destroy US space assets and the military advantages that either side would gain from antisatellite attacks. Nonetheless, some observers are once again advancing worst-case scenarios to support arguments for offensive counterspace capabilities. In some other countries, interest in space warfare may be increasing because of these arguments. If any nation, for whatever reason, launched an attack on a second nation's satellites, nuclear retaliation against terrestrial targets would be an irrational response. **But powerful countries do sometimes respond irrationally when attacked.** Moreover, disproportionate retaliation following a deliberate antisatellite attack is not the only way in which antisatellite weapons could contribute to nuclear war. It is not even the likeliest way. As was clearly understood by the countries that negotiated the Outer Space Treaty, crisis management would become more difficult, and the risk of **inadvertent deterrence failure** would increase, if satellites used for reconnaissance and communication were ~~disabled~~ or destroyed. But even if the norm against attacking another country’s satellites is never broken, developing and testing antisatellite weapons still increase the risk of nuclear war. If, for instance, US military leaders became seriously concerned that China or Russia were preparing an antisatellite attack, pressure could build for a **pre-emptive attack** against Chinese or Russian strategic forces. Should a satellite be struck by a piece of space debris during a crisis or a low-level terrestrial conflict, leaders might mistakenly assume that a space war had begun and retaliate before they knew what had actually happened. Such scenarios may seem improbable, but they are no more implausible than the scenarios that are used to justify the development and use of antisatellite weapons.

#### Carriers are key to deterrence and overall war fighting capabilities

Seth **Cropsey** Bryan **McGrath** **and** Timothy **Walton,** October **2015** (with MA @ Boston College, formerly Assistant to the Secretary of Defense Caspar Weinberger and subsequently served as Deputy Undersecretary of the Navy in the Reagan and Bush administrations, where he was responsible for the Navy's position on efforts to reorganize DoD, development of the maritime strategy, the Navy's academic institutions, naval special operations, and burden-sharing with NATO allies “Sharpening the Spear: The Carrier, the Joint Force, and High-End Conflict,” Hudson Policy Study//)HBJ

This study advances three key conclusions: • The Joint Force requires sea-based air power to conduct strike, air warfare, and surveillance. Sea-based air power provides classic naval functions (sea control and power projection) and serves as a key enabler of other Joint Force components necessary for victory in high-end conflict. This demand is growing. • The Carrier Strike Group (CSG), with the large, nuclear-powered aircraft carrier (CVN) at its core, remains the most effective and efficient means of providing these capabilities across the range of military options. • In order to provide these required capabilities, the Navy must pursue a series of conceptual, capability, and capacity improvements to the CVN, the Carrier Air Wing (CVW), and the CSG. The nation continues to require the power and flexibility of highly mobile, sea-based air power. Sea-based air power, provided by the large-deck aircraft carrier, plays a crucial role in establishing superiority over portions of the ocean in order to use that control to execute other operational tasks, or to deny the use of that sea-space to an adversary. The carrier provides critical strike, air warfare, and surveillance capabilities that other elements of the Joint Force would face difficulty providing—especially against a peer or nearpeer threat. The encompassing CSG combat system of mutually supporting carriers, aircraft, surface combatants, submarines, and logistics ships contributes a unique combination of organic mobility, endurance, and versatility to a Combatant Commander and the nation. Modern threats are evolving that jeopardizethe effectiveness of this combat system in the most demanding wartime scenarios, which in turn impacts the effectiveness of the Joint Force. This report details how the Navy and the nation can respond to those threats. The CSG plays a key role in providing presence, deterrence, and warfighting capabilities where the nation’s interests lie. Since the 1930s, the CSG has been an effective mechanism for both power projection and sea control, and the CSG has participated in nearly all types of naval operations. Recently, the CSG’s power, flexibility, and utility have been on display in operations in Afghanistan, Iraq, and Syria. This report concludes that the current demand will increase as Anti-Access/Area Denial (A2/AD) threats and sea control threats increase. However, serious concerns regarding the wisdom of procuring additional large, nuclearpowered aircraft carriers have been raised. Many of these concerns mirror similar concerns raised immediately after World War II, before the Vietnam War, and in the 1970s. In general these concerns center on the ship’s cost and operational vulnerability.

#### The US WINS a war now – two reasons

#### First, counterforce --

#### US strikes would catch Chinese nukes on the ground in a crisis – knocks out their arsenal and prevents escalation

Keir A. **Lieber** **and** Daryl G. **Press** 200**7**; Associate Professor in the Security Studies Program at Georgetown, and Associate Professor of Government at Dartmouth College Keir A. Lieber and Daryl G. Press, “US Nuclear Primacy and the Future of the Chinese Deterrent” China Security; Issue 5

Ironically, one of the clearest explanations for how the United States may use nuclear primacy in a crisis or war with China appears in an earlier article by Blair. His recent article with Chen labels our suggestion that the United States might use nuclear threats “the ze- nith of provocation” and “unthinkable.” ?? However, in the autumn 2005 issue of China Security, Blair describes exactly the crisis dynamics we envision leading to U.S. nuclear threats and perhaps even a preemptive nuclear attack. He notes that if China were to alert its strategic nuclear forces during a war with the United States over Taiwan, “**the United States would likely act to beat China to the punch**.” He continues, “Given constant U.S. surveillance of Chinese nuclear launch sites, any major Chinese preparations to fire peremptorily would be detected and countered by a rapid U.S. preemptive strike against the sites by U.S. conventional or nuclear forces… The United States could easily detect and react inside of the lengthy launch cycle time of Chinese forces.” Blair’s words mirror our argument and suggest the two ways that nuclear primacy may benefit the United States. First, if the Chinese were to threaten nuclear escalation in the context of a Taiwan war, **the U.S. could strike first and likely destroy the Chinese force on the ground** – “beat China to the punch,” as Blair puts it. Second, China’s knowledge of its vulnerability to nuclear preemption might prevent China from alerting its nuclear force – or even attacking Taiwan – in the first place.

#### We could easily wipe out China’s nuclear delivery vehicles

Charles L. **Glaser** August 20**16**; professor in the Elliott School of International Affairs and the Department of Political Science at George Washington University; he directs the Elliott School’s Institute for Security and Conflict Studies. “Forgoing U.S. Damage- Limitation against China’s Nuclear Weapons” This policy brief is based on “Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy toward China” which will appear in the summer 2016 issue of International Security. Belfer Center, Harvard University.

China currently deploys about 20 silo-based intercontinental ballistic missiles (ICBMs) and 25 mobile ICBMs capable of delivering warheads against cities in the United States. China is modernizing and expanding its ICBM force, which is predicted to reach 100 mobile ICBMs by 2030, and may soon deploy up to 60 submarine-launched ballistic missiles (SLBMs) on its new generation of ballistic missile submarines. **China’s silo-based missiles are highly vulnerable to attacks from extremely accurate U.S. nuclear missiles**; China’s current-genera- tion ballistic missile submarine is also likely to be **highly vulnerable to U.S. anti-submarine warfare capabilities**. Consequently, for at least the next decade, China’s ability to launch retaliatory strikes will depend on the survivability of its mobile ICBMs.

#### Second, subsea dominance – US attack subs and anti-submarine warfare would win any conflict with China

David **Axe** 7-7-20**14**; “China Thinks It Can Defeat America In Battle, But It Overlooks One Decisive Factor” July 7, 2014. The Week. David Axe, Military Correspondent And Journalist For The Week https://warisboring.com/china-thinks-it-can-defeat-america-in-battle-874bffe1b1b9#.xvktuyv8v

Fortunately for that liberal order, America possesses by far the world's most powerful submarine force — one poised to quickly sink any Chinese invasion fleet. In announcing its readiness to hold off the U.S. military, the PLA seems to have ignored Washington's **huge undersea advantage**. The Silent Service It's not surprising that Beijing would overlook America's subs. Most Americans overlook their own undersea fleet — and that's not entirely their own fault. The U.S. sub force takes pains to avoid media coverage in order to maximize its secrecy and stealth. "The submarine cruises the world's oceans unseen," the Navy stated on its Website. Unseen and unheard. That why the sub force calls itself the "Silent Service." The Navy has 74 submarines, 60 of which are attack or missile submarines optimized for finding and sinking other ships or blasting land targets. The balance is ballistic-missile boats that carry nuclear missiles and would not routinely participate in military campaigns short of an atomic World War III. Thirty-three of the attack and missile boats belong to the Pacific Fleet, with major bases in Washington State, California, Hawaii, and Guam. Deploying for six months or so roughly every year and a half, America's Pacific subs frequently stop over in Japan and South Korea and occasionally even venture under the Arctic ice. According to Adm. Cecil Haney, the former commander of Pacific Fleet subs, on any given day 17 boats are underway and eight are "forward-deployed," meaning they are on station in a potential combat zone. To the Pacific Fleet, that pretty much means waters near China. America has several submarine types. The numerous Los Angeles-class attack boats are Cold War stalwarts that are steadily being replaced by newer Virginia-class boats with improved stealth and sensors. The secretive Seawolfs, numbering just three — all of them in the Pacific — are big, fast, and more heavily armed than other subs. The Ohio-class missile submarines are former ballistic missile boats each packing 154 cruise missile. U.S. subs are, on average, bigger, faster, quieter, and more powerful than the rest of the world's subs. And there are more of them. The U.K. is building just seven new Astute attack boats. Russia aims to maintain around 12 modern attack subs. **China is struggling** to deploy a handful of rudimentary nuclear boats. Able to lurk silently under the waves and strike suddenly with torpedoes and missiles, submarines have tactical and strategic effect greatly disproportionate to their relatively small numbers. During the 1982 Falklands War, the British sub Conqueror torpedoed and sank the Argentine cruiser General Belgrano, killing 323 men. The sinking kept the rest of the Argentine fleet bottled up for the duration of the conflict. America's eight-at-a-time submarine picket in or near Chinese waters could be equally destructive to Chinese military plans, especially considering the PLA's limited anti-submarine skills. "Although China might control the surface of the sea around Taiwan, its ability to find and sink U.S. submarines will be extremely limited for the foreseeable future," Cliff testified. "Those submarines would likely be able to intercept and sink Chinese amphibious transports as they transited toward Taiwan." So it almost doesn't matter that a modernized PLA thinks it possesses the means to fight America above the waves, on land, and in the air. If it can't safely sail an invasion fleet as part of its territorial ambitions, **it can't achieve its strategic goals** — capturing Taiwan and or some island also claimed by a neighboring country — through overtly military means. That reality should inform Washington's own strategy. As the United States has already largely achieved the world order it struggled for over the last century, it need only preserve and defend this order. In other words, **America has the strategic high ground** against China, as the latter must attack and alter the world in order to get what it wants. In practical military terms, that means the Pentagon can **more or less ignore most of China's military capabilities**, **including those that appear to threaten traditional U.S. advantages in nukes**, air warfare, mechanized ground operations, and surface naval maneuvers. "

#### That allows a naval blockade – deters retaliation, prevents future aggression, and forces Chinese capitulation

Commander Victor L. **Vescovo**, 20**14** “Deterring The Dragon… From (Under) The Sea.” Proceedings Magazine, February 2014, Vol. 14/2/1,332. Commander Victor L. Vescovo, U.S. Navy Reserve (Retired)

The key strengths of China are its close proximity to the battlespace, numerous precision-strike-capable air or missile systems, and increasingly numerous amphibious forces. 4 China does, however, have two extraordinarily under-reported weaknesses: very poor antisubmarine and antimine capability, as well as ports and trade routes highly exposed to easy interdiction. These latter points are crucially important to how the United States should deter, or even wage war on China should it ever occur. 5 While China is significantly unprepared to wage antisubmarine and antimine warfare, one could persuasively argue that the same is true of almost every non-U.S. navy in the world. Difficult to conduct, such warfare requires expensive time at sea to become proficient, and few navies have the budgets or desire to train in these dull and frankly unpopular tactics. Given current and projected force structures 15 years in the future, it would defy military calculus to argue that China could successfully wage a counter-subsurface campaign earnestly executed by the United States. It simply does not have, nor does it appear it will soon have, the assets or training to do so. China has instead focused its recent naval expenditures on headline-grabbing naval assets like aircraft carriers and antiair-focused surface combatants, not antisubmarine and mine warfare. The Goal: Deterrence First It is unconscionably poor strategy, perhaps even military malpractice, to focus discussion primarily on how the United States should defend Taiwan or the far Western Pacific from Chinese military action using Air-Sea Battle or another operational concept. The adage that “amateurs study tactics, and professionals study logistics” may be true, but the leaders of nations should pursue force structures and doctrine that enhance deterrence. The goal of U.S. military strategy should be to deter Chinese military action in the first place through a clear, highly credible, and difficult-to-counter strategy that has highly negative and potentially dire consequences for the Chinese leadership. Deterrence occurs when a strategy and military posture causes an adversary’s leadership to believe they may not achieve a reasonable probability of victory without cost to themselves. Current American strategy and military posture does not seem to be accomplishing this. With the recent expansion of its air-defense identification zone in the East China Sea, China instead appears increasingly dismissive of the U.S. posture, which is highly dangerous for both sides. A new U.S. strategy should be that in the event of military conflict with the Chinese, the United States will physically interdict all military and civilian traffic, primarily with heavy inshore offensive mining using submarine and stand-off or unmanned systems. This should be paired with dramatically expanded financial and legal tools to halt air and sea trade. The intent would be to cause enough widespread economic upheaval, quickly and with low collateral damage, to promote political instability that could credibly and directly threaten the Chinese leadership’s rule. Some may be familiar with retired Marine Corps Colonel T. X. Hammes’ concept of Offshore Control and its opponent strategy, Air-Sea Battle, as espoused by Center for Naval Analyses researcher Elbridge Colby. The strategy proposed here is a hybrid of the two and advocates the active blockade and closure of commerce, as directed by Offshore Control, but in and near easily mined Chinese ports. This would be done primarily with subsurface, stand-off, and economic weaponry to avoid the bloodshed on all sides that would inflame Chinese nationalism and enhance Chinese Communist Party legitimacy. 6 A politically focused military strategy such as Offshore Control and this variant has not been widely advocated by leadership, but as military strategist Carl von Clausewitz taught, isn’t war supposed to be an extension of politics by other means—and isn’t deterrence the first goal of foreign and defense policy? This strategy may be met with derision by many because it doesn’t satisfy what seems to be an almost instinctive desire to plan for and engage in direct force-on-force combat showcasing our highest-visibility assets—carriers and advanced technology aircraft—and giving short shrift to more indirect (and less expensive) methods of warfare with mines, submarines, and the slow, grinding nature of blockade. Colonel Hammes is correct that “Air-Sea Battle is the antithesis of strategy.” 7 A subsurface/low-kinetic strategy variant of Offshore Control could achieve U.S. goals with a greater certainty of success—and more credibly—since it is politically less risky than bombing targets on the Chinese mainland, inflicting real or fabricated civilian collateral damage, or shooting down hundreds of Chinese pilots. This approach would increase conventional deterrence and reduce the threat of war in the first place. An additional benefit of a subsurface strategy is that it is much less vulnerable to China’s cyber- and electronic -warfare capabilities than an air- or surface-based offensive strategy. The sea acts as a massive electromagnetic barrier to interference and as de-facto armor against most forms of attack such as antisurface cruise or ballistic missiles like the DF-21D “carrier killer.” In general warfare conditions in the Western Pacific, the safest place will be under the waves—not on or above them. This point is grossly under-appreciated by the advocates of the Air-Sea Battle doctrine. As the British discovered in the Falklands Conflict, modern naval surface combat often turns out to be far more lethal than initially expected. And that was over 30 years ago before weapons became even more capable. Effective Execution At the outset of hostilities, the United States would first announce a total maritime exclusion zone extending at least 200 miles off the Chinese coast and around Taiwan. Any vessels entering this zone would be subject to boarding, internment, or even sinking if deemed hostile or simply in violation of the exclusion zone. This is similar to what the British effectively did in the 1982 Falklands campaign. Second, the United States would specify that our forces will immediately begin extensive mining of the zone, especially Chinese ports, with submarines, aircraft, cruise missiles, and drones. All merchant vessels would be advised not to depart any Chinese port while those already within the zone would be advised to leave it along published, narrow, safe-passage exit corridors. Even with a limited number of submarines and stealthy long-range bombers or drones, enough mining near port areas could rapidly halt most Chinese maritime commerce. The Chinese would not even know the extent of the mining operation because much of it could be delivered via subsurface methods. One great strength of subsurface warfare is that it is extremely difficult for the defender to know just how dangerous the threat is because it can’t observe the activity. Simply barging through mined areas can result in vessel sinkings, which can in turn block critical ports or channels. The defender, then, is forced to engage in slow, careful, and laborious mine clearing, losing operational speed and all-important initiative. 8 Third, the American government would declare that U.S. financial institutions and courts may not enforce or pay any insurance claims, trade credit, or similar financial instruments for commercial vessels that were judged—by the sole discretion of the United States—as operating in the exclusion zone for commercial or any other purpose with China. Military analysis almost always underestimates the power of U.S. financial or legal actions to alter, or even halt, commercial maritime traffic, actions that would be a very powerful weapon with respect to China. It doesn’t even matter if the proclamation would be legal: The possibility that it could be enforced would make worldwide insurers or banks order their captains to halt movement into the area or risk major financial loss. The United States should use its hard-won worldwide financial hegemony to enhance its military strategies of deterrence. Strategic Steps For the United States to achieve an effective subsurface deterrent strategy, there are a number of steps that must be taken. Clearly communicate the strategy to the adversary. The essence of deterrence is to clearly communicate a credible, potentially effective strategy that would thwart an aggressor’s attempts to circumvent it. China would not be deterred from military adventurism unless an effective American counter-strategy is clearly described and advanced as policy. An aggressive subsurface/indirect strategy, with a clear (if unvoiced) intent to foment political dissent and even rebellion in China during wartime, could be effective. Enhance the subsurface warfare capability of the U.S. Navy, particularly in the area of offensive mine warfare. It is a travesty of military procurement that the United States abandoned its encapsulated torpedo (CAPTOR) mine program and has invested less than 1 percent of its defense research-and-development budget on one of the most effective, historically proven forms of naval warfare: offensive mining. 9 CAPTOR-like mines are capable of mooring on the ocean floor, waiting patiently, and suddenly launching a high-speed torpedo at priority vessels. Advances in smart weaponry have not been applied to offensive mine warfare; modern mines could have the ability to self deploy at stand-off ranges from submarines, come equipped with stealthy anti-sonar coatings, use multiple types of sensors to identify targets, and even communicate with one another over short distances. The last CAPTOR-like mines were developed in 1979—35 years ago. Converted Ohio -class nuclear-powered guided-missile submarines, as quiet as the nuclear-powered ballistic-missile vessels they once were, should have the capability to deploy with a full loadout of perhaps as many 150 mines. 10 If the 1970s-era technology Mk-67 sea-launched mobile mine and CAPTOR mines, for example, were improved and made similar in size to a Tomahawk cruise missile, the Navy would have the ability to remotely deploy over 75 influence mines into inshore port areas, and another 75 torpedo-based CAPTOR mines farther offshore, all from the highest-stealth platform in the U.S. naval arsenal. In times of crisis, the United States could even signal that two or more such vessels were already in the conflict area and unlike in the case of an aircraft carrier, the Chinese leadership almost certainly would not even know if it was true, increasing all-important deterrence. Finally, there should be development of cruise missiles paired with the “Destructor” series of naval mines. This would allow for the immediate, stand-off mining of high-value but heavily protected areas such as ports. Swarms of cruise missiles, even if only partially successful at placing their warheads into ports, would likely halt or severely slow operations until there was reasonable assurance after hours, days, or even weeks, that they had been cleared. Risk to U.S. personnel in such mining operations would be zero, and there would be none of the dramatic or politically damaging effects of watching bombs hitting Chinese cities on CNN. Mining doesn’t cause the emotional reaction of outright bombing; instead it effectively achieves the strategic goal of interdicting sea movements. Regularly conduct high-profile offensive subsurface training exercises. American heavy bomber and drone squadrons should be seen engaging in frequent and obvious demonstrations of airborne mining operations, both at night and at low-altitude. Attack submarines should regularly practice stand-off, shallow-water mining operations. Regardless of how classified our training programs are, Chinese intelligence will eventually discover our true activities, and these exercises will cement the threat as credible and confirm that our training matches our stated wartime strategy. Otherwise, deterrence is weakened. Quietly practice offensive counterinsurgency operations around China’s periphery. If the United States wanted to take this strategy to its obvious but most provocative end, it could also become avowed U.S. strategy to offensively insert unconventional warfare materials and training teams into the outlying provinces of China—specifically Xiniang and Tibet—once hostilities begin. It is difficult to think of any other potential wartime doctrine that would more unnerve the Chinese leadership and act as a strategic deterrent than the belief that hostilities with the United States would result in American covert assets immediately inserting into China proper to train local guerrilla cadres. This is especially true for regions that already have a history of violent dissent and no love for the ethnic Han Chinese central leadership. Acute Impact The wartime effect of this strategy on China could be immediate and threatening to its leadership. Without maritime trade, China’s export-driven employment engine would likely go into free fall. While the West would temporarily suffer the lack of China’s manufactured products, most of them are consumer-oriented and more easily done without. Alternatively, China could probably not sustain the political risk of unemployment, declining living standards, and fuel shortages, particularly in the wealthier and freer-speaking coastal provinces that would be hit hardest. For a time, Chinese nationalism might be able to overcome the psychological effect of personal economic distress and keep the population supporting the government, but this could not last indefinitely. After just one to two months of cut-off exports and no significant Chinese casualties from collateral damage, Chinese economic discontent could become acute. We may never need to get to this point, though. If the Chinese leadership believes this could happen, it would be deterred from aggression in the first place. Given its relative fear of civilian dissent, even a partially credible U.S. strategy to choke off economic security and spur political rebellion could achieve the deterrence sought. Even if China were to win a conflict quickly, the political damage wrought by providing arms and training to its outlying dissidents—even temporarily—might take decades to undo. It would be one more variable the Chinese leadership would have to worry about, and thus hopefully increase the power of those voices arguing against military adventurism. Deterrence is dependent on maximizing an adversary’s worst fears, without provoking pre-emption. For example, American special-operations forces, training with the Indian military in the northern Himalayas to practice high-altitude insertions near the Tibetan border, would probably cause the Chinese leaders to go apoplectic—and probably enhance deterrence at very little cost. Preserving Pax Americana Pacifica Many military leaders often quote Chinese military strategist Sun Tzu but seem to frequently overlook his most important lesson: The acme of skill is to win without fighting. Along the Pacific Rim, the United States has achieved virtually all of its strategic goals:freedom of the seas, containment of dangerous regimes like North Korea, and a chain of allies and bases to prevent any country from easily acting in an aggressive manner. Thus, victory for the United States in the near future is to simply prevent any major conflicts, especially with China. A clear-eyed assessment of the relative strengths and weaknesses of the United States and China, especially in the political and economic realms, point to a conventional deterrence strategy that should focus on making war very dangerous for China’s leadership. Its political Achilles’ heel is the fear of popular rebellion, which stirs violently when the economy fails. Its military Achilles’ heel is the low level of anti-ubmarine and mine warfare capability. Its economic weakness? Dependence on foreign trade and U.S. financial and legal hegemony. These serious weaknesses strongly suggest the United States should favor a subsurface/indirect strategy. Specifically designed to harm the Chinese economy and foment internal rebellion, it probably has the greatest chance of deterring any Chinese leaders’ desires for military adventurism. It also has the great advantage of sidestepping potential vulnerabilities of U.S. carrier, tactical air, space, or even cyber forces that are often highlighted in many periodicals. A subsurface strategy is not reliant on these forces. It is also a strategy of minimal violence in that it only attacks vessels choosing to move, and does not require sustained violence against enemy combatants or have significant collateral damage potential other than that of an economic nature. Advanced mines could even be programmed to disarm or detonate if pinged with appropriate sonar codes, like the Army’s SPIDER system, or to self-destruct after set time intervals. The combination of a clearly U.S.–advantaged strategy that aims directly at the heart of Chinese military and political vulnerabilities **will cause Chinese leaders to think twice about any serious military adventurism** and thus preserve the Pax Americana Pacifica and tame the worst, militaristic impulses of the Chinese dragon.

#### Otherwise, China seizes regional hegemony – causes water wars, war over Taiwan, South China Sea escalation, China-Japan war, and Indo-Sino war

John J. **Mearsheimer** 10-25-20**14**; R. Wendell Harrison Distinguished Service Professor of Political Science at the University Of Chicago. “Can China Rise Peacefully?” Excerpt From The Tragedy Of The Great Power Politics, Published By The National Interest

Although maximizing its prospects of survival is the principal reason China will seek to dominate Asia, there is another reason, related to Beijing’s territorial disputes with some of its neighbors. As Taylor Fravel points out, China has managed to settle most of its border conflicts since 1949—seventeen out of twenty-three—in good part because it has been willing to make some significant concessions to the other side. Nevertheless, China has six outstanding territorial disagreements, and there is little reason—at least at this juncture—to think the involved parties will find a clever diplomatic solution to them. Probably China’s most important dispute is over Taiwan, which Beijing is deeply committed to making an integral part of China once again. The present government on Taiwan, however, believes it is a sovereign country and has no interest in being reintegrated into China. Taiwanese leaders do not advertise their independence, for fear it will provoke China to invade Taiwan. In addition, China has ongoing disputes with Vietnam over control of the Paracel Islands in the South China Sea, and with Brunei, Malaysia, the Philippines, Taiwan, and Vietnam over the Spratly Islands, which are also located in the South China Sea. More generally, China maintains that it has sovereignty over almost all of the South China Sea, a claim disputed not only by its neighbors but by the United States as well. Farther to the north in the East China Sea, Beijing has a bitter feud with Japan over who controls a handful of small islands that Tokyo calls the Senkaku Islands and China labels the Diaoyu Islands. Finally, China has land border disputes with Bhutan and India. In fact, China and India fought a war over the disputed territory in 1962, and the two sides have engaged in provocative actions on numerous occasions since then. For example, New Delhi maintains there were 400 Chinese incursions into Indian-controlled territory during 2012 alone; and in mid-April 2013, Chinese troops—for the first time since 1986—refused to return to China after they were discovered on the Indian side of the Line of Actual Control. It appears that China has been stepping up its cross-border raids in recent years in response to increased Indian troop deployments and an accompanying growth in infrastructure. Given the importance of these territorial disputes to China, coupled with the apparent difficulty of resolving them through the give-and-take of diplomacy, the best way for China to settle them on favorable terms is probably via coercion. Specifically, **a China that is much more powerful than any of its neighbors will be in a good position to use military threats** to force the other side to accept a deal largely on China’s terms. And if that does not work, China can always unsheathe the sword and **go to war to get its way**. It seems likely that coercion or the actual use of force is the only plausible way China is going to regain Taiwan. In short, becoming a regional hegemon is the best pathway for China to resolve its various territorial disputes on favorable terms. It is worth noting that in addition to these territorial disputes, China might become embroiled in conflict with its neighbors over water. The Tibetan Plateau, which is located within China’s borders, is the third-largest repository of freshwater in the world, ranking behind the Arctic and Antarctica. Indeed, it is sometimes referred to as the “third pole.” It is also the main source of many of Asia’s great rivers, including the Brahmaputra, the Irrawaddy, the Mekong, the Salween, the Sutlej, the Yangtze, and the Yellow. Most of these rivers flow into neighboring countries, where they have a profound effect on the daily lives of many millions of people. In recent years, Beijing has shown much interest in rerouting water from these rivers to heavily populated areas in eastern and northern China. Toward that end, China has built canals, dams, irrigation systems, and pipelines. This plan is in its early stages and has yet to change the flow of these rivers in a meaningful fashion. But the potential for trouble is substantial, because the neighboring countries downstream are likely to see a marked reduction in their water supply over time, which could have devastating economic and social consequences. For example, the Chinese are interested in diverting the Brahmaputra River northward into the dying Yellow River. If this happens, it would cause major problems in India and especially in Bangladesh. China is also working to redirect water from the Mekong River, a diversion that is almost certain to cause big problems in Southeast Asian countries like Cambodia, Laos, Thailand, and Vietnam. In its efforts to begin rerouting the rivers flowing out of the Tibetan Plateau, **China has acted unilaterally and shown little interest in building international institutions that can help manage the ensuing problems**. Given that water is becoming an increasingly scarce resource in Asia, this **problem is likely to get worse with time** and, given the enormous stakes involved, might even lead to **war between China and one or more of its neighbors**.

#### Counterforcing means no extinction

**Mueller, 09 -** Woody Hayes Chair of National Security Studies and Professor of Political Science at Ohio State University (John, “Atomic Obsession: Nuclear Alarmism from Hiroshima to Al-Qaeda” p. 8, Google Books)

To begin to approach a condition that can credibly justify applying such extreme characterizations as societal annihilation, a full-out attack with hundreds, probably thousands, of thermonuclear bombs would be required.  Even in such extreme cases, the area actually devastated by the bombs' blast and thermal pulse effective would be limited: 2,000 1-MT explosions with a destructive radius of 5 miles each would directly demolish less than 5 percent of the territory of the United States, for example. Obviously, if major population centers were targeted, this sort of attack could inflict massive casualties.  Back in cold war days, when such devastating events sometimes seemed uncomfortably likely, a number of studies were conducted to estimate the consequences of massive thermonuclear attacks.  One of the most prominent of these considered several probabilities.  The most likely scenario--one that could be perhaps considered at least to begin to approach the rational--was a "counterforce" strike in which well over 1,000 thermonuclear weapons would be targeted at America's ballistic missile silos, strategic airfields, and nuclear submarine bases in an effort to destroy the country’s strategic ability to retaliate.  Since the attack would not directly target population centers, most of the ensuing deaths would be from radioactive fallout, and the study estimates that from 2 to 20 million, depending mostly on wind, weather, and sheltering, would perish during the first month.15

#### Even maximum fallout won’t kill everyone

**Child, ‘6** (James W. received his PhD in history and philosophy of science from Indiana U, Nuclear War: The Moral Dimension)

Not only does Schell exaggerate many times over the effects of a fallout maximizing attack, he completely ignores the effects of shielding or shelter. Although it would save the lives of cast numbers of Americans, he simply does not bring it up. A dosage of 1300 rems would be fatal to virtually all human beings who were completely exposed (that is outside all the time during the full exposure period) But unlike Schell’s 10,000 rem exposure, there are many things one could do to mitigate it. So called “territorial masking” – being to the leeward of a hill, for example, would cut exposure by 30 to 60 percent. By simply staying inside an ordinary residence, one would reduce the exposure to 40 percent of the outside dosage. This could bring the level of exposure below 50 percent the fatality level (450) rems. Taking shelter in a residential basement would reduce the exposure to 5 to 10 percent of the outside level, which takes it under the threshold for any form of manifest radiation sickness. Surprisingly, the dose rate for a typical apartment house is 10 percent of outside exposure on the ground floor (a reduction of 90 percent) and as little as 1 percent in upper floors (a reduction of 99 percent). All of this mitigation occurs without any sort of preplanned fallout shelter, merely staying inside or staying in a basement. In short, even in so theoretical a radiation maximizing attack as schell postulates, a very large proportion of the population could and would survive.

#### Nuclear winter is a myth based on bad science

**Seitz, ‘06** (Russell, Harvard University Center for International Affairs visiting scholar, "The' Nuclear Winter ' Meltdown; Photoshopping the Apocalypse," adamant.typepad.com/seitz/2006/12/preherein\_honor.html, accessed 9-25-11)

The recent winter solstice witnessed a 'Carl Sagan Blog-a-thon' . So in celebration of Al Gore's pal, the late author of The Cold And The Dark there follows The Wall Street Journal's warmly cautionary Cold War reminder of how a campaign for the Nobel Peace prize on the Nuclear Freeze ticket devolved into a joke played at the expense of climate modeling's street cred on the eve of the global warming debate :The Melting of 'Nuclear Winter' All that remains of Sagan's Big Chill are curves such as this , Fig3tempprecip\_4\_2 but history is full of prophets of doom who fail to deliver, not all are without honor in their own land. The 1983 'Nuclear Winter " papers in Science were so politicized that even the eminently liberal President of The Council for a Liveable World called "The worst example ofthe misrepesentation of science to the public in my memory." Among the authors was Stanford President Donald Kennedy. Today he edits Science , the nation's major arbiter of climate science--and policy. Below, a case illustrating the mid-range of the ~.7 to ~1.6 degree C maximum cooling the 2006 studies suggest is superimposed in color on the Blackly Apocalyptic predictions published in Science Vol. 222, 1983 . They're worth comparing, because the range of soot concentrations in the new models overlaps with cases assumed to have dire climatic consequences in the widely publicized 1983 scenarios --Meltdownofttaps "Apocalyptic predictions require, to be taken seriously,higher standards of evidence than do assertions on other matters where the stakes are not as great." wrote Sagan in Foreign Affairs , Winter 1983 -84. But that "**evidence**" **was never forthcoming**. 'Nuclear Winter' never existed outside of a computer except as air-brushed animation commissioned by the a PR firm - Porter Novelli Inc. Yet Sagan predicted "the extinction of the human species " as temperatures plummeted 35 degrees C and the world froze in the aftermath of a nuclear holocaust. Last year, Sagan's cohort tried to reanimate the ghost in a machine anti-nuclear activists invoked in the depths of the Cold War, by re-running equally arbitrary scenarios on a modern interactive Global Circulation Model. But the Cold War is history in more ways than one. It is a credit to post-modern computer climate simulations that they **do not reproduce the apocalyptic results** of what Sagan oxymoronically termed "a sophisticated one dimensional model." The subzero 'baseline case' has melted down into a tepid 1.3 degrees of average cooling- grey skies do not a Ragnarok make. What remains is **just not the stuff that End of the World myths are made of**. It is hard to exaggerate how seriously " nuclear winter "was once taken by policy analysts who ought to have known better. Many were taken aback by the sheer force of Sagan's rhetoric Remarkably, Science's news coverage of the new results fails to graphically compare them with the old ones Editor Kennedy and other recent executives of the American Association for the Advancement of Science, once proudly co-authored and helped to publicize. You can't say they didn't try to reproduce this Cold War icon. Once again, soot from imaginaryPropaganda\_penguin\_1\_1 software materializes in midair by the megaton , flying higher than Mount Everest . This is not physics, but a crude exercise in ' garbage in, gospel out' parameter forcing designed to maximize and extend the cooling an aeosol can generate, by sparing it from realistic attrition by rainout in the lower atmosphere. Despite decades of progress in modeling atmospheric chemistry , there is none in this computer simulation, and ignoring photochemistry further extends its impact. Fortunately , the history of science is as hard to erase as it is easy to ignore. Their past mastery of semantic agression cannot spare the authors of "Nuclear Winter Lite " direct comparison of their new results and their old. Dark smoke clouds in the lower atmosphere don't last long enough to spread across the globe. Cloud droplets and rainfall remove them, rapidly washing them out of the sky in a matter of days to weeks- not long enough to sustain a global pall. Real world weather brings down particles much as soot is scrubbed out of power plant smoke by the water sprays in smoke stack scrubbers Robock acknowledges this- not even a single degree of cooling results when soot is released at lower elevations in he models . The workaround is to inject the imaginary aerosol at truly Himalayan elevations - pressure altitudes of 300 millibar and higher , where the computer model's vertical transport function modules pass it off to their even higher neighbors in the stratosphere , where it does not rain and particles linger.. The new studies like the old suffer from the disconnect between a desire to paint the sky black and the vicissitudes of natural history. As with many exercise in worst case models both at invoke rare phenomena as commonplace, claiming it prudent to assume the worst. But the real world is subject to Murphy's lesser known second law- if everything must go wrong, don't bet on it. In 2006 as in 1983 firestorms and forest fires that send smoke into the stratosphere rise to alien prominence in the modelers re-imagined world , but i the real one remains a very different place, where though every month sees forest fires burning areas the size of cities - 2,500 hectares or larger , stratospheric smoke injections arise but once in a blue moon. So how come these neo-nuclear winter models feature so much smoke so far aloft for so long? The answer is simple- **the modelers intervened**. Turning off vertical transport algorithms may make Al Gore happy- he has bet on reviving the credibility Sagan's ersatz apocalypse , but there is no denying that in some of these scenarios human desire, not physical forces accounts for the vertical hoisting of millions of tons of mass ten vertical kilometers into the sky.to the level at which the models take over , with results at once predictable --and arbitrary. This is not physics, it is computer gamesmanship carried over to a new generation of X-Box.

#### No resource wars – no causal evidence, only maybe true for the poorest countries, and government responses solve the impact

Mark W. **Rosegrant 13**, Director of the Environment and Production Technology Division at the International Food Policy Research Institute, et al., 2013, “The Future of the Global Food Economy: Scenarios for Supply, Demand, and Prices,” in Food Security and Sociopolitical Stability, p. 39-40

The food price spikes in the late 2000s caught the world’s attention, particularly when sharp increases in food and fuel prices in 2008 coincided with **street demonstrations and riots** in many countries. For 2008 and the two preceding years, researchers identified a significant number of countries (totaling 54) with protests during what was called the global food crisis (Benson et al. 2008). Violent protests occurred in 21 countries, and nonviolent protests occurred in 44 countries. Both types of protest took place in 11 countries. In a separate analysis, developing countries with low government effectiveness experienced more food price protests between 2007 and 2008 than countries with high government effectiveness (World Bank 201la). Although the incidence of violent protests was much higher in countries with less capable governance, **many factors** could be causing or contributing to these protests, such as government response tactics, **rather than the initial food price spike**.

Data on food riots and food prices have tracked together in recent years. Agricultural commodity prices started strengthening in international markets in 2006. In the latter half of 2007, as prices continued to rise, two or fewer food price riots per month were recorded (based on World Food Programme data, as reported in Brinkman and Hendrix 2011). As prices peaked and remained high during mid-2008, the number of riots increased dramatically, with a cumulative total of 84 by August 2008. Subsequently, both prices and the monthly number of protests declined.

Several researchers have studied the connection between food price shocks and conflict, finding at least some relationship between food prices and conflict. According to Dell et al. (2008), higher food prices lead to income declines and an increase in political instability, but **only for poor countries**. Researchers also found a positive and significant relationship between weather shocks (affecting food availability, prices, and real income) and the probability of suffering government repression or a civil war (Besley and Persson 2009). Arezki and Bruckner (2011) evaluated a constructed food price index and political variables, including data on riots and anti-government demonstrations and measures of civil unrest. Using data from 61 countries over the period 1970 to 2007, they found a direct connection between food price shocks and an increased likelihood of civil conflict, including riots and demonstrations.

Other researchers have broadened the analysis by **considering government responses** or underlying policies that affect local prices, and consequently influence outcomes and the linkage between food price shocks and conflict. Carter and Bates (2012) evaluated data from 30 developing countries for the time period 1961 to 2001, concluding that when governments mitigate the impact of food price shocks on urban consumers, the **apparent relationship between food price shocks and civil war disappears**. Moreover, when the urban consumers can expect a favorable response, the protests only serve as a **motivation for a policy response** rather than as a prelude to something more serious, such as **violent demonstrations or** even **civil war**.

Many in the international development community see war and conflict as a development issue, with a war or conflict severely damaging the local economy, which in turn leads to forced migration and dislocation, and ultimately acute food insecurity. Brinkman and Hendrix (2011) ask if it could be the other way around, with food insecurity causing conflict. Their answer, based on a review of the literature, is "a **highly qualified yes**," **especially** for intrastate conflict. The primary reason is that insecurity itself heightens the risk of democratic breakdown and civil conflict. The linkage connecting food insecurity to conflict is contingent on levels of economic development (a stronger linkage for poorer countries), existing political institutions, and other factors. The researchers say **establishing causation directly is elusive**, considering a **lack of evidence** for explaining individual behavior. The debate over cause and effect is ongoing.

Policies can nevertheless be implemented to reduce price variability. Less costly forms of stabilization, at least in terms of government outlays, include reducing import tariffs (and quotas) to lower prices and restricting exports to increase food availability. However, these types of policy responses, while perhaps helping an individual country's consumers in the short run, can lead to increased international price volatility, with potential for disproportionate adverse impacts on other countries that also may be experiencing food insecurity.

### 1NC --- Medium China Turn

#### US-Sino war inevitable – modernization of Chinese indefensible aircraft carriers and space weaponization coming now

**Gertz 14** – Lecturer on defense & national security (Bill Gertz, “China Military Buildup Shifts Balance of Power in Asia in Beijing’s Favor”, The Washington Free Beacon, 10/13/2014, http://freebeacon.com/national-security/china-military-buildup-shifts-balance-of-power-in-asia-in-beijings-favor/)//MBB

China’s decades-long buildup of strategic and conventional military forces is shifting the balance of power in Asia in Beijing’s favor and **increasing** the **risk of a conflict**, according to a forthcoming report by a congressional China commission. China’s military has greatly expanded its air and naval forces and is sharply increasing its missile forces, even while adopting a more hostile posture against the United States and regional allies in Asia, states a late draft of the annual report of the bipartisan U.S.-China Economic and Security Review Commission. As a result, “the potential for security miscalculation in the region is rising,” the report said, using the euphemism for a conflict or shootout between Chinese forces and U.S. forces or those of its regional allies. The report paints an alarming picture of China’s growing aggressiveness and expanding power, including development of two new stealth jets, the first deployment of a naval expeditionary amphibious group to the Indian Ocean, and aerial bombing exercises held in Kazakhstan. China’s communist government also views the United States as its main adversary—**despite strong trade and financial links between the two countries**, the report says. The commission report—to be released in final form in November—concludes that the war-footing-like buildup by the People’s Liberation Army is increasing the risk that a conflict will break out between the United States and China. A copy of the draft report was obtained by the Washington Free Beacon. “China’s rapid military modernization is altering the military balance of power in the Asia Pacific in ways that could engender destabilizing security competition between other major nearby countries, such as Japan and India, and exacerbate regional hotspots such as Taiwan, the Korean Peninsula, the East China Sea, and the South China Sea,” the report concludes in a section on military developments With declining U.S. defense spending and cuts in forces, the balance of power in Asia “is shifting in China’s favor,” the report says. The report warns that China’s communist leaders are fueling nationalist tensions amid concerns about declining economic growth and increasing social unrest. “Promoting a sense of grievance among the Chinese people and creating diversionary tensions in the region would carry real risks of escalation and create the potential for the United States to be drawn into a regional conflict,” the report says. The high-technology weapons and other capabilities China is fielding also pose a growing threat to America’s ability to deter regional conflicts, defend allies and maintain open and secure air and sea-lanes. As China builds up its naval power, the U.S. Navy is declining, and the current American ability to defeat China in a conflict will be difficult to maintain, the report says. **By 2020, China is expected to have 342 submarines and missile-firing warships deployed, many of them equipped with advanced weapons. By comparison, the total U.S. naval forces will be 243 ships and submarines in 2020.** Recent Chinese provocations in sea and aerial encounters also are a signs the two nations could become embroiled in a conflict. “China already has initiated dangerous encounters at sea on several occasions,” the report said, noting the near-aerial collision between a Chinese interceptor jet and a Navy P-8 reconnaissance aircraft. Rick Fisher, a China military affairs analyst, said the congressional report augments a sometimes-deficient Pentagon annual assessment of the Chinese military. “The China Commission is hitting its stride concerning China’s growing military challenge, offering the Congress an expansive and multi-dimensional assessment of that challenge not offered by the Pentagon’s annual China Military Power reports,” said Fisher, with the International Assessment and Strategy Center. Fisher credits the commission for highlighting the shift in the balance of power that he said is linked to China’s growth in air and space power. “**The regional balance of power shift in China’s favor is based on well documented analysis and should be required reading for anyone concerned with China’s growing ability to threaten U.S. interests in Asia,” he said.** The report also confirms that China twice this year tested a new, ultra-high speed strategic strike vehicle called the Wu-14. When deployed, the Wu-14 will give the Chinese military the capability of attacking any target on earth in as little as “minutes to hours,” the report says. The hypersonic vehicle tests were first disclosed by the Free Beacon in January and August. A super fast strike vehicle that glides to its targets of speeds of up to nearly 8,000 miles per hour could be deployed by 2020 and a similar high-speed scramjet powered hypersonic attack vehicle could be fielded before 2025, the report says. “Hypersonic glide vehicles could render existing U.S. missile defense systems less effective and potentially obsolete,” the report says. On China’s strategic nuclear buildup, the report identifies China’s large-scale buildup of both conventional and nuclear-armed missiles as a serious threat. China’s has as many as 1,895 ballistic and cruise missiles, including up to 1,200 short-range missiles, up to 100 medium-range missiles, up to 20 intermediate-range missiles, up to 75 intercontinental missiles, and up to 500 ground-launched land attack cruise missiles. The Pentagon after 2010 halted releasing annual assessments of Chinese missile forces that one expert said undercuts the Obama administration’s policy of seeking a more open Chinese military by “indirectly assisting Chinese secrecy.” For short-range missiles, China currently is developing five new systems with ranges between 94 and 174 miles. The new missiles will have greater accuracy and lethality. For targeting U.S. forces in Japan and South Korea, China has deployed DF-21C theater-range missiles with ranges of about 1,240 miles and appears to have developed a second system, the DF-16. Its new intermediate-range missile, to be deployed in the next five years, will be able to hit U.S. forces on Guam, Northern Australia, Alaska, and U.S. forces in the Middle East and Indian Ocean. A variant of the DF-21D is a unique anti-ship ballistic missile that has been deployed in two brigades in southeastern and northeast China. China’s nuclear strike forces remain couched in secrecy, the report said. “China’s official statements about its nuclear forces and nuclear capabilities are rare and vague in order to maintain ‘strategic ambiguity,’” the report says. The commission report faults the Pentagon for ending its practice of providing details of China’s nuclear arsenal in annual reports to Congress, saying the omission is contributing to Chinese military secrecy. The Pentagon has not released an assessment of Chinese nuclear forces since 2006 when it said China had more than 100 warheads. Current estimates by non-government analysts place the number of Chinese nuclear warheads as from 250 to as many as 3,000. “Despite the uncertainty surrounding China’s stockpiles of nuclear missiles and nuclear warheads, it is clear that China’s nuclear forces over the next three to five years will expand considerably and become more lethal and survivable with the fielding of additional road-mobile nuclear missiles; the integration of as many as five [Jin-class missile submarines], each of which can carry 12 JL-2 submarine-launched ballistic missiles; and the introduction of intercontinental ballistic missiles armed with multiple independently targetable reentry vehicles,” the report says. China also is modernizing its silo-based nuclear missiles, along with hardening storage facilities, launch sites, and transportation networks. The network of some 3,000 miles of underground nuclear facilities is also being expanded, the report states. China currently has deployed five road-mobile long-range missiles, and one submarine-launched ballistic missile, the JL-2, with a new JL-3 missile planned for 2020. The newest system is the DF-41 ICBM that is expected to be deployed as early as next year with up to 10 multiple nuclear warheads. The DF-41’s range of about 7,456 miles is sufficient “to target the entire continental United States,” the report states. The Free Beacon first disclosed Oct. 2 that China flight-tested a sixth road-mobile ICMB, the DF-31B. The test appeared to take place after the cutoff date of June for most information in the commission report. The report also includes the graphic published in China’s state-run Global Times in November revealing that a Chinese submarine-launched ballistic missile attack on the United States could kill 5 million to 12 million people. China’s space warfare programs also are expanding significantly, according to the report. “**The PLA is pursuing a broad counterspace program to challenge U.S.** **information superiority in a conflict and disrupt or destroy U.S. satellites if necessary**,” the report said. Recent missile tests indicate Chinese anti-satellite weapons can destroy both low-altitude and high-altitude satellites, including strategic Global Positioning System satellites and communications and intelligence orbiters. “China likely will be able to hold at risk U.S. national security satellites in every orbital regime in the next five to ten years,” the report says. The report also revealed China last year conducted a space test of three small, maneuvering satellites, one of which is capable of grabbing and destroying orbiting satellites. To counter the Chinese military buildup, the commission recommends that Congress increase funding for naval deployments in Asia; continue three-a-year production of Virginia-class submarines; develop an unmanned Navy carrier strike aircraft; fund a new long-range anti-ship missile; and build ship-based directed energy arms. The commission also wants Congress to direct the Pentagon to provide more details on China’s conventional and nuclear missiles and warheads. On China’s cyber espionage activities, the report said China’s government has been engaged in “large-scale” cyber attacks against U.S. networks, including defense and private company systems. Among the data stolen by Chinese hackers were details of U.S. weapons systems including Patriot anti-missile defenses, the F-35 and F-18 jets, P-8 reconnaissance aircraft, Global Hawk drones, Black Hawk helicopters, Aegis ballistic missile defenses, and the Littoral Combat ship. The Chinese military also obtained secrets on defense technologies, including know-how related to directed energy weapons, drone video systems, technical data links, satellite communications, electronic warfare systems, and electromagnetic aircraft launch systems. “In addition to stealing the designs of these weapon systems and technologies, China’s cyber actors targeted internal communications, program schedules, meeting minutes, and human resource records, among other documents,” the report said. The Obama administration policy of not responding forcefully to Chinese cyber attacks is not working, the report says, despite the federal indictment in May of five Chinese military hackers. “China’s material incentives for continuing this activity are immense and unlikely to be altered by small-scale U.S. actions,” the report says. Other key findings of the report include: Chinese President Xi Jinping has made China’s missile forces the “core strength” strategic deterrence. Chinese defense spending will continue to fund an acceleration of the military modernization for the next five years. **A** U.S. defense analyst said China’s efficient defense spending could render U.S. aircraft carriers difficult to defend**.** China could build 1,127 DF-21D anti-ship ballistic missiles for the cost of one U.S. aircraft carrier at $13.5 billion. China is using the estimated 235,000 Chinese students studying in the United States to conduct technology collection for the Beijing government. Joint ventures between Chinese and U.S. companies include a legal requirement for the Chinese firms to share technology with the Chinese military and intelligence services.

#### The US WINS a war now – two reasons

#### First, counterforce --

#### US strikes would catch Chinese nukes on the ground in a crisis – knocks out their arsenal and prevents escalation

Keir A. **Lieber** **and** Daryl G. **Press** 200**7**; Associate Professor in the Security Studies Program at Georgetown, and Associate Professor of Government at Dartmouth College Keir A. Lieber and Daryl G. Press, “US Nuclear Primacy and the Future of the Chinese Deterrent” China Security; Issue 5

Ironically, one of the clearest explanations for how the United States may use nuclear primacy in a crisis or war with China appears in an earlier article by Blair. His recent article with Chen labels our suggestion that the United States might use nuclear threats “the ze- nith of provocation” and “unthinkable.” ?? However, in the autumn 2005 issue of China Security, Blair describes exactly the crisis dynamics we envision leading to U.S. nuclear threats and perhaps even a preemptive nuclear attack. He notes that if China were to alert its strategic nuclear forces during a war with the United States over Taiwan, “**the United States would likely act to beat China to the punch**.” He continues, “Given constant U.S. surveillance of Chinese nuclear launch sites, any major Chinese preparations to fire peremptorily would be detected and countered by a rapid U.S. preemptive strike against the sites by U.S. conventional or nuclear forces… The United States could easily detect and react inside of the lengthy launch cycle time of Chinese forces.” Blair’s words mirror our argument and suggest the two ways that nuclear primacy may benefit the United States. First, if the Chinese were to threaten nuclear escalation in the context of a Taiwan war, **the U.S. could strike first and likely destroy the Chinese force on the ground** – “beat China to the punch,” as Blair puts it. Second, China’s knowledge of its vulnerability to nuclear preemption might prevent China from alerting its nuclear force – or even attacking Taiwan – in the first place.

#### We could easily wipe out China’s nuclear delivery vehicles

Charles L. **Glaser** August 20**16**; professor in the Elliott School of International Affairs and the Department of Political Science at George Washington University; he directs the Elliott School’s Institute for Security and Conflict Studies. “Forgoing U.S. Damage- Limitation against China’s Nuclear Weapons” This policy brief is based on “Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy toward China” which will appear in the summer 2016 issue of International Security. Belfer Center, Harvard University.

China currently deploys about 20 silo-based intercontinental ballistic missiles (ICBMs) and 25 mobile ICBMs capable of delivering warheads against cities in the United States. China is modernizing and expanding its ICBM force, which is predicted to reach 100 mobile ICBMs by 2030, and may soon deploy up to 60 submarine-launched ballistic missiles (SLBMs) on its new generation of ballistic missile submarines. **China’s silo-based missiles are highly vulnerable to attacks from extremely accurate U.S. nuclear missiles**; China’s current-genera- tion ballistic missile submarine is also likely to be **highly vulnerable to U.S. anti-submarine warfare capabilities**. Consequently, for at least the next decade, China’s ability to launch retaliatory strikes will depend on the survivability of its mobile ICBMs.

#### Second, subsea dominance – US attack subs and anti-submarine warfare would win any conflict with China

David **Axe** 7-7-20**14**; “China Thinks It Can Defeat America In Battle, But It Overlooks One Decisive Factor” July 7, 2014. The Week. David Axe, Military Correspondent And Journalist For The Week https://warisboring.com/china-thinks-it-can-defeat-america-in-battle-874bffe1b1b9#.xvktuyv8v

Fortunately for that liberal order, America possesses by far the world's most powerful submarine force — one poised to quickly sink any Chinese invasion fleet. In announcing its readiness to hold off the U.S. military, the PLA seems to have ignored Washington's **huge undersea advantage**. The Silent Service It's not surprising that Beijing would overlook America's subs. Most Americans overlook their own undersea fleet — and that's not entirely their own fault. The U.S. sub force takes pains to avoid media coverage in order to maximize its secrecy and stealth. "The submarine cruises the world's oceans unseen," the Navy stated on its Website. Unseen and unheard. That why the sub force calls itself the "Silent Service." The Navy has 74 submarines, 60 of which are attack or missile submarines optimized for finding and sinking other ships or blasting land targets. The balance is ballistic-missile boats that carry nuclear missiles and would not routinely participate in military campaigns short of an atomic World War III. Thirty-three of the attack and missile boats belong to the Pacific Fleet, with major bases in Washington State, California, Hawaii, and Guam. Deploying for six months or so roughly every year and a half, America's Pacific subs frequently stop over in Japan and South Korea and occasionally even venture under the Arctic ice. According to Adm. Cecil Haney, the former commander of Pacific Fleet subs, on any given day 17 boats are underway and eight are "forward-deployed," meaning they are on station in a potential combat zone. To the Pacific Fleet, that pretty much means waters near China. America has several submarine types. The numerous Los Angeles-class attack boats are Cold War stalwarts that are steadily being replaced by newer Virginia-class boats with improved stealth and sensors. The secretive Seawolfs, numbering just three — all of them in the Pacific — are big, fast, and more heavily armed than other subs. The Ohio-class missile submarines are former ballistic missile boats each packing 154 cruise missile. U.S. subs are, on average, bigger, faster, quieter, and more powerful than the rest of the world's subs. And there are more of them. The U.K. is building just seven new Astute attack boats. Russia aims to maintain around 12 modern attack subs. **China is struggling** to deploy a handful of rudimentary nuclear boats. Able to lurk silently under the waves and strike suddenly with torpedoes and missiles, submarines have tactical and strategic effect greatly disproportionate to their relatively small numbers. During the 1982 Falklands War, the British sub Conqueror torpedoed and sank the Argentine cruiser General Belgrano, killing 323 men. The sinking kept the rest of the Argentine fleet bottled up for the duration of the conflict. America's eight-at-a-time submarine picket in or near Chinese waters could be equally destructive to Chinese military plans, especially considering the PLA's limited anti-submarine skills. "Although China might control the surface of the sea around Taiwan, its ability to find and sink U.S. submarines will be extremely limited for the foreseeable future," Cliff testified. "Those submarines would likely be able to intercept and sink Chinese amphibious transports as they transited toward Taiwan." So it almost doesn't matter that a modernized PLA thinks it possesses the means to fight America above the waves, on land, and in the air. If it can't safely sail an invasion fleet as part of its territorial ambitions, **it can't achieve its strategic goals** — capturing Taiwan and or some island also claimed by a neighboring country — through overtly military means. That reality should inform Washington's own strategy. As the United States has already largely achieved the world order it struggled for over the last century, it need only preserve and defend this order. In other words, **America has the strategic high ground** against China, as the latter must attack and alter the world in order to get what it wants. In practical military terms, that means the Pentagon can **more or less ignore most of China's military capabilities**, **including those that appear to threaten traditional U.S. advantages in nukes**, air warfare, mechanized ground operations, and surface naval maneuvers. "

#### That allows a naval blockade – deters retaliation, prevents future aggression, and forces Chinese capitulation

Commander Victor L. **Vescovo**, 20**14** “Deterring The Dragon… From (Under) The Sea.” Proceedings Magazine, February 2014, Vol. 14/2/1,332. Commander Victor L. Vescovo, U.S. Navy Reserve (Retired)

The key strengths of China are its close proximity to the battlespace, numerous precision-strike-capable air or missile systems, and increasingly numerous amphibious forces. 4 China does, however, have two extraordinarily under-reported weaknesses: very poor antisubmarine and antimine capability, as well as ports and trade routes highly exposed to easy interdiction. These latter points are crucially important to how the United States should deter, or even wage war on China should it ever occur. 5 While China is significantly unprepared to wage antisubmarine and antimine warfare, one could persuasively argue that the same is true of almost every non-U.S. navy in the world. Difficult to conduct, such warfare requires expensive time at sea to become proficient, and few navies have the budgets or desire to train in these dull and frankly unpopular tactics. Given current and projected force structures 15 years in the future, it would defy military calculus to argue that China could successfully wage a counter-subsurface campaign earnestly executed by the United States. It simply does not have, nor does it appear it will soon have, the assets or training to do so. China has instead focused its recent naval expenditures on headline-grabbing naval assets like aircraft carriers and antiair-focused surface combatants, not antisubmarine and mine warfare. The Goal: Deterrence First It is unconscionably poor strategy, perhaps even military malpractice, to focus discussion primarily on how the United States should defend Taiwan or the far Western Pacific from Chinese military action using Air-Sea Battle or another operational concept. The adage that “amateurs study tactics, and professionals study logistics” may be true, but the leaders of nations should pursue force structures and doctrine that enhance deterrence. The goal of U.S. military strategy should be to deter Chinese military action in the first place through a clear, highly credible, and difficult-to-counter strategy that has highly negative and potentially dire consequences for the Chinese leadership. Deterrence occurs when a strategy and military posture causes an adversary’s leadership to believe they may not achieve a reasonable probability of victory without cost to themselves. Current American strategy and military posture does not seem to be accomplishing this. With the recent expansion of its air-defense identification zone in the East China Sea, China instead appears increasingly dismissive of the U.S. posture, which is highly dangerous for both sides. A new U.S. strategy should be that in the event of military conflict with the Chinese, the United States will physically interdict all military and civilian traffic, primarily with heavy inshore offensive mining using submarine and stand-off or unmanned systems. This should be paired with dramatically expanded financial and legal tools to halt air and sea trade. The intent would be to cause enough widespread economic upheaval, quickly and with low collateral damage, to promote political instability that could credibly and directly threaten the Chinese leadership’s rule. Some may be familiar with retired Marine Corps Colonel T. X. Hammes’ concept of Offshore Control and its opponent strategy, Air-Sea Battle, as espoused by Center for Naval Analyses researcher Elbridge Colby. The strategy proposed here is a hybrid of the two and advocates the active blockade and closure of commerce, as directed by Offshore Control, but in and near easily mined Chinese ports. This would be done primarily with subsurface, stand-off, and economic weaponry to avoid the bloodshed on all sides that would inflame Chinese nationalism and enhance Chinese Communist Party legitimacy. 6 A politically focused military strategy such as Offshore Control and this variant has not been widely advocated by leadership, but as military strategist Carl von Clausewitz taught, isn’t war supposed to be an extension of politics by other means—and isn’t deterrence the first goal of foreign and defense policy? This strategy may be met with derision by many because it doesn’t satisfy what seems to be an almost instinctive desire to plan for and engage in direct force-on-force combat showcasing our highest-visibility assets—carriers and advanced technology aircraft—and giving short shrift to more indirect (and less expensive) methods of warfare with mines, submarines, and the slow, grinding nature of blockade. Colonel Hammes is correct that “Air-Sea Battle is the antithesis of strategy.” 7 A subsurface/low-kinetic strategy variant of Offshore Control could achieve U.S. goals with a greater certainty of success—and more credibly—since it is politically less risky than bombing targets on the Chinese mainland, inflicting real or fabricated civilian collateral damage, or shooting down hundreds of Chinese pilots. This approach would increase conventional deterrence and reduce the threat of war in the first place. An additional benefit of a subsurface strategy is that it is much less vulnerable to China’s cyber- and electronic -warfare capabilities than an air- or surface-based offensive strategy. The sea acts as a massive electromagnetic barrier to interference and as de-facto armor against most forms of attack such as antisurface cruise or ballistic missiles like the DF-21D “carrier killer.” In general warfare conditions in the Western Pacific, the safest place will be under the waves—not on or above them. This point is grossly under-appreciated by the advocates of the Air-Sea Battle doctrine. As the British discovered in the Falklands Conflict, modern naval surface combat often turns out to be far more lethal than initially expected. And that was over 30 years ago before weapons became even more capable. Effective Execution At the outset of hostilities, the United States would first announce a total maritime exclusion zone extending at least 200 miles off the Chinese coast and around Taiwan. Any vessels entering this zone would be subject to boarding, internment, or even sinking if deemed hostile or simply in violation of the exclusion zone. This is similar to what the British effectively did in the 1982 Falklands campaign. Second, the United States would specify that our forces will immediately begin extensive mining of the zone, especially Chinese ports, with submarines, aircraft, cruise missiles, and drones. All merchant vessels would be advised not to depart any Chinese port while those already within the zone would be advised to leave it along published, narrow, safe-passage exit corridors. Even with a limited number of submarines and stealthy long-range bombers or drones, enough mining near port areas could rapidly halt most Chinese maritime commerce. The Chinese would not even know the extent of the mining operation because much of it could be delivered via subsurface methods. One great strength of subsurface warfare is that it is extremely difficult for the defender to know just how dangerous the threat is because it can’t observe the activity. Simply barging through mined areas can result in vessel sinkings, which can in turn block critical ports or channels. The defender, then, is forced to engage in slow, careful, and laborious mine clearing, losing operational speed and all-important initiative. 8 Third, the American government would declare that U.S. financial institutions and courts may not enforce or pay any insurance claims, trade credit, or similar financial instruments for commercial vessels that were judged—by the sole discretion of the United States—as operating in the exclusion zone for commercial or any other purpose with China. Military analysis almost always underestimates the power of U.S. financial or legal actions to alter, or even halt, commercial maritime traffic, actions that would be a very powerful weapon with respect to China. It doesn’t even matter if the proclamation would be legal: The possibility that it could be enforced would make worldwide insurers or banks order their captains to halt movement into the area or risk major financial loss. The United States should use its hard-won worldwide financial hegemony to enhance its military strategies of deterrence. Strategic Steps For the United States to achieve an effective subsurface deterrent strategy, there are a number of steps that must be taken. Clearly communicate the strategy to the adversary. The essence of deterrence is to clearly communicate a credible, potentially effective strategy that would thwart an aggressor’s attempts to circumvent it. China would not be deterred from military adventurism unless an effective American counter-strategy is clearly described and advanced as policy. An aggressive subsurface/indirect strategy, with a clear (if unvoiced) intent to foment political dissent and even rebellion in China during wartime, could be effective. Enhance the subsurface warfare capability of the U.S. Navy, particularly in the area of offensive mine warfare. It is a travesty of military procurement that the United States abandoned its encapsulated torpedo (CAPTOR) mine program and has invested less than 1 percent of its defense research-and-development budget on one of the most effective, historically proven forms of naval warfare: offensive mining. 9 CAPTOR-like mines are capable of mooring on the ocean floor, waiting patiently, and suddenly launching a high-speed torpedo at priority vessels. Advances in smart weaponry have not been applied to offensive mine warfare; modern mines could have the ability to self deploy at stand-off ranges from submarines, come equipped with stealthy anti-sonar coatings, use multiple types of sensors to identify targets, and even communicate with one another over short distances. The last CAPTOR-like mines were developed in 1979—35 years ago. Converted Ohio -class nuclear-powered guided-missile submarines, as quiet as the nuclear-powered ballistic-missile vessels they once were, should have the capability to deploy with a full loadout of perhaps as many 150 mines. 10 If the 1970s-era technology Mk-67 sea-launched mobile mine and CAPTOR mines, for example, were improved and made similar in size to a Tomahawk cruise missile, the Navy would have the ability to remotely deploy over 75 influence mines into inshore port areas, and another 75 torpedo-based CAPTOR mines farther offshore, all from the highest-stealth platform in the U.S. naval arsenal. In times of crisis, the United States could even signal that two or more such vessels were already in the conflict area and unlike in the case of an aircraft carrier, the Chinese leadership almost certainly would not even know if it was true, increasing all-important deterrence. Finally, there should be development of cruise missiles paired with the “Destructor” series of naval mines. This would allow for the immediate, stand-off mining of high-value but heavily protected areas such as ports. Swarms of cruise missiles, even if only partially successful at placing their warheads into ports, would likely halt or severely slow operations until there was reasonable assurance after hours, days, or even weeks, that they had been cleared. Risk to U.S. personnel in such mining operations would be zero, and there would be none of the dramatic or politically damaging effects of watching bombs hitting Chinese cities on CNN. Mining doesn’t cause the emotional reaction of outright bombing; instead it effectively achieves the strategic goal of interdicting sea movements. Regularly conduct high-profile offensive subsurface training exercises. American heavy bomber and drone squadrons should be seen engaging in frequent and obvious demonstrations of airborne mining operations, both at night and at low-altitude. Attack submarines should regularly practice stand-off, shallow-water mining operations. Regardless of how classified our training programs are, Chinese intelligence will eventually discover our true activities, and these exercises will cement the threat as credible and confirm that our training matches our stated wartime strategy. Otherwise, deterrence is weakened. Quietly practice offensive counterinsurgency operations around China’s periphery. If the United States wanted to take this strategy to its obvious but most provocative end, it could also become avowed U.S. strategy to offensively insert unconventional warfare materials and training teams into the outlying provinces of China—specifically Xiniang and Tibet—once hostilities begin. It is difficult to think of any other potential wartime doctrine that would more unnerve the Chinese leadership and act as a strategic deterrent than the belief that hostilities with the United States would result in American covert assets immediately inserting into China proper to train local guerrilla cadres. This is especially true for regions that already have a history of violent dissent and no love for the ethnic Han Chinese central leadership. Acute Impact The wartime effect of this strategy on China could be immediate and threatening to its leadership. Without maritime trade, China’s export-driven employment engine would likely go into free fall. While the West would temporarily suffer the lack of China’s manufactured products, most of them are consumer-oriented and more easily done without. Alternatively, China could probably not sustain the political risk of unemployment, declining living standards, and fuel shortages, particularly in the wealthier and freer-speaking coastal provinces that would be hit hardest. For a time, Chinese nationalism might be able to overcome the psychological effect of personal economic distress and keep the population supporting the government, but this could not last indefinitely. After just one to two months of cut-off exports and no significant Chinese casualties from collateral damage, Chinese economic discontent could become acute. We may never need to get to this point, though. If the Chinese leadership believes this could happen, it would be deterred from aggression in the first place. Given its relative fear of civilian dissent, even a partially credible U.S. strategy to choke off economic security and spur political rebellion could achieve the deterrence sought. Even if China were to win a conflict quickly, the political damage wrought by providing arms and training to its outlying dissidents—even temporarily—might take decades to undo. It would be one more variable the Chinese leadership would have to worry about, and thus hopefully increase the power of those voices arguing against military adventurism. Deterrence is dependent on maximizing an adversary’s worst fears, without provoking pre-emption. For example, American special-operations forces, training with the Indian military in the northern Himalayas to practice high-altitude insertions near the Tibetan border, would probably cause the Chinese leaders to go apoplectic—and probably enhance deterrence at very little cost. Preserving Pax Americana Pacifica Many military leaders often quote Chinese military strategist Sun Tzu but seem to frequently overlook his most important lesson: The acme of skill is to win without fighting. Along the Pacific Rim, the United States has achieved virtually all of its strategic goals:freedom of the seas, containment of dangerous regimes like North Korea, and a chain of allies and bases to prevent any country from easily acting in an aggressive manner. Thus, victory for the United States in the near future is to simply prevent any major conflicts, especially with China. A clear-eyed assessment of the relative strengths and weaknesses of the United States and China, especially in the political and economic realms, point to a conventional deterrence strategy that should focus on making war very dangerous for China’s leadership. Its political Achilles’ heel is the fear of popular rebellion, which stirs violently when the economy fails. Its military Achilles’ heel is the low level of anti-ubmarine and mine warfare capability. Its economic weakness? Dependence on foreign trade and U.S. financial and legal hegemony. These serious weaknesses strongly suggest the United States should favor a subsurface/indirect strategy. Specifically designed to harm the Chinese economy and foment internal rebellion, it probably has the greatest chance of deterring any Chinese leaders’ desires for military adventurism. It also has the great advantage of sidestepping potential vulnerabilities of U.S. carrier, tactical air, space, or even cyber forces that are often highlighted in many periodicals. A subsurface strategy is not reliant on these forces. It is also a strategy of minimal violence in that it only attacks vessels choosing to move, and does not require sustained violence against enemy combatants or have significant collateral damage potential other than that of an economic nature. Advanced mines could even be programmed to disarm or detonate if pinged with appropriate sonar codes, like the Army’s SPIDER system, or to self-destruct after set time intervals. The combination of a clearly U.S.–advantaged strategy that aims directly at the heart of Chinese military and political vulnerabilities **will cause Chinese leaders to think twice about any serious military adventurism** and thus preserve the Pax Americana Pacifica and tame the worst, militaristic impulses of the Chinese dragon.

#### Otherwise, China seizes regional hegemony – causes water wars, war over Taiwan, South China Sea escalation, China-Japan war, and Indo-Sino war

John J. **Mearsheimer** 10-25-20**14**; R. Wendell Harrison Distinguished Service Professor of Political Science at the University Of Chicago. “Can China Rise Peacefully?” Excerpt From The Tragedy Of The Great Power Politics, Published By The National Interest

Although maximizing its prospects of survival is the principal reason China will seek to dominate Asia, there is another reason, related to Beijing’s territorial disputes with some of its neighbors. As Taylor Fravel points out, China has managed to settle most of its border conflicts since 1949—seventeen out of twenty-three—in good part because it has been willing to make some significant concessions to the other side. Nevertheless, China has six outstanding territorial disagreements, and there is little reason—at least at this juncture—to think the involved parties will find a clever diplomatic solution to them. Probably China’s most important dispute is over Taiwan, which Beijing is deeply committed to making an integral part of China once again. The present government on Taiwan, however, believes it is a sovereign country and has no interest in being reintegrated into China. Taiwanese leaders do not advertise their independence, for fear it will provoke China to invade Taiwan. In addition, China has ongoing disputes with Vietnam over control of the Paracel Islands in the South China Sea, and with Brunei, Malaysia, the Philippines, Taiwan, and Vietnam over the Spratly Islands, which are also located in the South China Sea. More generally, China maintains that it has sovereignty over almost all of the South China Sea, a claim disputed not only by its neighbors but by the United States as well. Farther to the north in the East China Sea, Beijing has a bitter feud with Japan over who controls a handful of small islands that Tokyo calls the Senkaku Islands and China labels the Diaoyu Islands. Finally, China has land border disputes with Bhutan and India. In fact, China and India fought a war over the disputed territory in 1962, and the two sides have engaged in provocative actions on numerous occasions since then. For example, New Delhi maintains there were 400 Chinese incursions into Indian-controlled territory during 2012 alone; and in mid-April 2013, Chinese troops—for the first time since 1986—refused to return to China after they were discovered on the Indian side of the Line of Actual Control. It appears that China has been stepping up its cross-border raids in recent years in response to increased Indian troop deployments and an accompanying growth in infrastructure. Given the importance of these territorial disputes to China, coupled with the apparent difficulty of resolving them through the give-and-take of diplomacy, the best way for China to settle them on favorable terms is probably via coercion. Specifically, **a China that is much more powerful than any of its neighbors will be in a good position to use military threats** to force the other side to accept a deal largely on China’s terms. And if that does not work, China can always unsheathe the sword and **go to war to get its way**. It seems likely that coercion or the actual use of force is the only plausible way China is going to regain Taiwan. In short, becoming a regional hegemon is the best pathway for China to resolve its various territorial disputes on favorable terms. It is worth noting that in addition to these territorial disputes, China might become embroiled in conflict with its neighbors over water. The Tibetan Plateau, which is located within China’s borders, is the third-largest repository of freshwater in the world, ranking behind the Arctic and Antarctica. Indeed, it is sometimes referred to as the “third pole.” It is also the main source of many of Asia’s great rivers, including the Brahmaputra, the Irrawaddy, the Mekong, the Salween, the Sutlej, the Yangtze, and the Yellow. Most of these rivers flow into neighboring countries, where they have a profound effect on the daily lives of many millions of people. In recent years, Beijing has shown much interest in rerouting water from these rivers to heavily populated areas in eastern and northern China. Toward that end, China has built canals, dams, irrigation systems, and pipelines. This plan is in its early stages and has yet to change the flow of these rivers in a meaningful fashion. But the potential for trouble is substantial, because the neighboring countries downstream are likely to see a marked reduction in their water supply over time, which could have devastating economic and social consequences. For example, the Chinese are interested in diverting the Brahmaputra River northward into the dying Yellow River. If this happens, it would cause major problems in India and especially in Bangladesh. China is also working to redirect water from the Mekong River, a diversion that is almost certain to cause big problems in Southeast Asian countries like Cambodia, Laos, Thailand, and Vietnam. In its efforts to begin rerouting the rivers flowing out of the Tibetan Plateau, **China has acted unilaterally and shown little interest in building international institutions that can help manage the ensuing problems**. Given that water is becoming an increasingly scarce resource in Asia, this **problem is likely to get worse with time** and, given the enormous stakes involved, might even lead to **war between China and one or more of its neighbors**.

### 1NC --- Short China Turn

#### US-Sino war inevitable – modernization of Chinese indefensible aircraft carriers and space weaponization coming now

**Gertz 14** – Lecturer on defense & national security (Bill Gertz, “China Military Buildup Shifts Balance of Power in Asia in Beijing’s Favor”, The Washington Free Beacon, 10/13/2014, http://freebeacon.com/national-security/china-military-buildup-shifts-balance-of-power-in-asia-in-beijings-favor/)//MBB

China’s decades-long buildup of strategic and conventional military forces is shifting the balance of power in Asia in Beijing’s favor and **increasing** the **risk of a conflict**, according to a forthcoming report by a congressional China commission. China’s military has greatly expanded its air and naval forces and is sharply increasing its missile forces, even while adopting a more hostile posture against the United States and regional allies in Asia, states a late draft of the annual report of the bipartisan U.S.-China Economic and Security Review Commission. As a result, “the potential for security miscalculation in the region is rising,” the report said, using the euphemism for a conflict or shootout between Chinese forces and U.S. forces or those of its regional allies. The report paints an alarming picture of China’s growing aggressiveness and expanding power, including development of two new stealth jets, the first deployment of a naval expeditionary amphibious group to the Indian Ocean, and aerial bombing exercises held in Kazakhstan. China’s communist government also views the United States as its main adversary—**despite strong trade and financial links between the two countries**, the report says. The commission report—to be released in final form in November—concludes that the war-footing-like buildup by the People’s Liberation Army is increasing the risk that a conflict will break out between the United States and China. A copy of the draft report was obtained by the Washington Free Beacon. “China’s rapid military modernization is altering the military balance of power in the Asia Pacific in ways that could engender destabilizing security competition between other major nearby countries, such as Japan and India, and exacerbate regional hotspots such as Taiwan, the Korean Peninsula, the East China Sea, and the South China Sea,” the report concludes in a section on military developments With declining U.S. defense spending and cuts in forces, the balance of power in Asia “is shifting in China’s favor,” the report says. The report warns that China’s communist leaders are fueling nationalist tensions amid concerns about declining economic growth and increasing social unrest. “Promoting a sense of grievance among the Chinese people and creating diversionary tensions in the region would carry real risks of escalation and create the potential for the United States to be drawn into a regional conflict,” the report says. The high-technology weapons and other capabilities China is fielding also pose a growing threat to America’s ability to deter regional conflicts, defend allies and maintain open and secure air and sea-lanes. As China builds up its naval power, the U.S. Navy is declining, and the current American ability to defeat China in a conflict will be difficult to maintain, the report says. **By 2020, China is expected to have 342 submarines and missile-firing warships deployed, many of them equipped with advanced weapons. By comparison, the total U.S. naval forces will be 243 ships and submarines in 2020.** Recent Chinese provocations in sea and aerial encounters also are a signs the two nations could become embroiled in a conflict. “China already has initiated dangerous encounters at sea on several occasions,” the report said, noting the near-aerial collision between a Chinese interceptor jet and a Navy P-8 reconnaissance aircraft. Rick Fisher, a China military affairs analyst, said the congressional report augments a sometimes-deficient Pentagon annual assessment of the Chinese military. “The China Commission is hitting its stride concerning China’s growing military challenge, offering the Congress an expansive and multi-dimensional assessment of that challenge not offered by the Pentagon’s annual China Military Power reports,” said Fisher, with the International Assessment and Strategy Center. Fisher credits the commission for highlighting the shift in the balance of power that he said is linked to China’s growth in air and space power. “**The regional balance of power shift in China’s favor is based on well documented analysis and should be required reading for anyone concerned with China’s growing ability to threaten U.S. interests in Asia,” he said.** The report also confirms that China twice this year tested a new, ultra-high speed strategic strike vehicle called the Wu-14. When deployed, the Wu-14 will give the Chinese military the capability of attacking any target on earth in as little as “minutes to hours,” the report says. The hypersonic vehicle tests were first disclosed by the Free Beacon in January and August. A super fast strike vehicle that glides to its targets of speeds of up to nearly 8,000 miles per hour could be deployed by 2020 and a similar high-speed scramjet powered hypersonic attack vehicle could be fielded before 2025, the report says. “Hypersonic glide vehicles could render existing U.S. missile defense systems less effective and potentially obsolete,” the report says. On China’s strategic nuclear buildup, the report identifies China’s large-scale buildup of both conventional and nuclear-armed missiles as a serious threat. China’s has as many as 1,895 ballistic and cruise missiles, including up to 1,200 short-range missiles, up to 100 medium-range missiles, up to 20 intermediate-range missiles, up to 75 intercontinental missiles, and up to 500 ground-launched land attack cruise missiles. The Pentagon after 2010 halted releasing annual assessments of Chinese missile forces that one expert said undercuts the Obama administration’s policy of seeking a more open Chinese military by “indirectly assisting Chinese secrecy.” For short-range missiles, China currently is developing five new systems with ranges between 94 and 174 miles. The new missiles will have greater accuracy and lethality. For targeting U.S. forces in Japan and South Korea, China has deployed DF-21C theater-range missiles with ranges of about 1,240 miles and appears to have developed a second system, the DF-16. Its new intermediate-range missile, to be deployed in the next five years, will be able to hit U.S. forces on Guam, Northern Australia, Alaska, and U.S. forces in the Middle East and Indian Ocean. A variant of the DF-21D is a unique anti-ship ballistic missile that has been deployed in two brigades in southeastern and northeast China. China’s nuclear strike forces remain couched in secrecy, the report said. “China’s official statements about its nuclear forces and nuclear capabilities are rare and vague in order to maintain ‘strategic ambiguity,’” the report says. The commission report faults the Pentagon for ending its practice of providing details of China’s nuclear arsenal in annual reports to Congress, saying the omission is contributing to Chinese military secrecy. The Pentagon has not released an assessment of Chinese nuclear forces since 2006 when it said China had more than 100 warheads. Current estimates by non-government analysts place the number of Chinese nuclear warheads as from 250 to as many as 3,000. “Despite the uncertainty surrounding China’s stockpiles of nuclear missiles and nuclear warheads, it is clear that China’s nuclear forces over the next three to five years will expand considerably and become more lethal and survivable with the fielding of additional road-mobile nuclear missiles; the integration of as many as five [Jin-class missile submarines], each of which can carry 12 JL-2 submarine-launched ballistic missiles; and the introduction of intercontinental ballistic missiles armed with multiple independently targetable reentry vehicles,” the report says. China also is modernizing its silo-based nuclear missiles, along with hardening storage facilities, launch sites, and transportation networks. The network of some 3,000 miles of underground nuclear facilities is also being expanded, the report states. China currently has deployed five road-mobile long-range missiles, and one submarine-launched ballistic missile, the JL-2, with a new JL-3 missile planned for 2020. The newest system is the DF-41 ICBM that is expected to be deployed as early as next year with up to 10 multiple nuclear warheads. The DF-41’s range of about 7,456 miles is sufficient “to target the entire continental United States,” the report states. The Free Beacon first disclosed Oct. 2 that China flight-tested a sixth road-mobile ICMB, the DF-31B. The test appeared to take place after the cutoff date of June for most information in the commission report. The report also includes the graphic published in China’s state-run Global Times in November revealing that a Chinese submarine-launched ballistic missile attack on the United States could kill 5 million to 12 million people. China’s space warfare programs also are expanding significantly, according to the report. “**The PLA is pursuing a broad counterspace program to challenge U.S.** **information superiority in a conflict and disrupt or destroy U.S. satellites if necessary**,” the report said. Recent missile tests indicate Chinese anti-satellite weapons can destroy both low-altitude and high-altitude satellites, including strategic Global Positioning System satellites and communications and intelligence orbiters. “China likely will be able to hold at risk U.S. national security satellites in every orbital regime in the next five to ten years,” the report says. The report also revealed China last year conducted a space test of three small, maneuvering satellites, one of which is capable of grabbing and destroying orbiting satellites. To counter the Chinese military buildup, the commission recommends that Congress increase funding for naval deployments in Asia; continue three-a-year production of Virginia-class submarines; develop an unmanned Navy carrier strike aircraft; fund a new long-range anti-ship missile; and build ship-based directed energy arms. The commission also wants Congress to direct the Pentagon to provide more details on China’s conventional and nuclear missiles and warheads. On China’s cyber espionage activities, the report said China’s government has been engaged in “large-scale” cyber attacks against U.S. networks, including defense and private company systems. Among the data stolen by Chinese hackers were details of U.S. weapons systems including Patriot anti-missile defenses, the F-35 and F-18 jets, P-8 reconnaissance aircraft, Global Hawk drones, Black Hawk helicopters, Aegis ballistic missile defenses, and the Littoral Combat ship. The Chinese military also obtained secrets on defense technologies, including know-how related to directed energy weapons, drone video systems, technical data links, satellite communications, electronic warfare systems, and electromagnetic aircraft launch systems. “In addition to stealing the designs of these weapon systems and technologies, China’s cyber actors targeted internal communications, program schedules, meeting minutes, and human resource records, among other documents,” the report said. The Obama administration policy of not responding forcefully to Chinese cyber attacks is not working, the report says, despite the federal indictment in May of five Chinese military hackers. “China’s material incentives for continuing this activity are immense and unlikely to be altered by small-scale U.S. actions,” the report says. Other key findings of the report include: Chinese President Xi Jinping has made China’s missile forces the “core strength” strategic deterrence. Chinese defense spending will continue to fund an acceleration of the military modernization for the next five years. **A** U.S. defense analyst said China’s efficient defense spending could render U.S. aircraft carriers difficult to defend**.** China could build 1,127 DF-21D anti-ship ballistic missiles for the cost of one U.S. aircraft carrier at $13.5 billion. China is using the estimated 235,000 Chinese students studying in the United States to conduct technology collection for the Beijing government. Joint ventures between Chinese and U.S. companies include a legal requirement for the Chinese firms to share technology with the Chinese military and intelligence services.

#### The US WINS a war now – two reasons

#### First, counterforce --

#### US strikes would catch Chinese nukes on the ground in a crisis – knocks out their arsenal and prevents escalation

Keir A. **Lieber** **and** Daryl G. **Press** 200**7**; Associate Professor in the Security Studies Program at Georgetown, and Associate Professor of Government at Dartmouth College Keir A. Lieber and Daryl G. Press, “US Nuclear Primacy and the Future of the Chinese Deterrent” China Security; Issue 5

Ironically, one of the clearest explanations for how the United States may use nuclear primacy in a crisis or war with China appears in an earlier article by Blair. His recent article with Chen labels our suggestion that the United States might use nuclear threats “the ze- nith of provocation” and “unthinkable.” ?? However, in the autumn 2005 issue of China Security, Blair describes exactly the crisis dynamics we envision leading to U.S. nuclear threats and perhaps even a preemptive nuclear attack. He notes that if China were to alert its strategic nuclear forces during a war with the United States over Taiwan, “**the United States would likely act to beat China to the punch**.” He continues, “Given constant U.S. surveillance of Chinese nuclear launch sites, any major Chinese preparations to fire peremptorily would be detected and countered by a rapid U.S. preemptive strike against the sites by U.S. conventional or nuclear forces… The United States could easily detect and react inside of the lengthy launch cycle time of Chinese forces.” Blair’s words mirror our argument and suggest the two ways that nuclear primacy may benefit the United States. First, if the Chinese were to threaten nuclear escalation in the context of a Taiwan war, **the U.S. could strike first and likely destroy the Chinese force on the ground** – “beat China to the punch,” as Blair puts it. Second, China’s knowledge of its vulnerability to nuclear preemption might prevent China from alerting its nuclear force – or even attacking Taiwan – in the first place.

#### We could easily wipe out China’s nuclear delivery vehicles

Charles L. **Glaser** August 20**16**; professor in the Elliott School of International Affairs and the Department of Political Science at George Washington University; he directs the Elliott School’s Institute for Security and Conflict Studies. “Forgoing U.S. Damage- Limitation against China’s Nuclear Weapons” This policy brief is based on “Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy toward China” which will appear in the summer 2016 issue of International Security. Belfer Center, Harvard University.

China currently deploys about 20 silo-based intercontinental ballistic missiles (ICBMs) and 25 mobile ICBMs capable of delivering warheads against cities in the United States. China is modernizing and expanding its ICBM force, which is predicted to reach 100 mobile ICBMs by 2030, and may soon deploy up to 60 submarine-launched ballistic missiles (SLBMs) on its new generation of ballistic missile submarines. **China’s silo-based missiles are highly vulnerable to attacks from extremely accurate U.S. nuclear missiles**; China’s current-genera- tion ballistic missile submarine is also likely to be **highly vulnerable to U.S. anti-submarine warfare capabilities**. Consequently, for at least the next decade, China’s ability to launch retaliatory strikes will depend on the survivability of its mobile ICBMs.

#### Second, subsea dominance – US attack subs and anti-submarine warfare would win any conflict with China

David **Axe** 7-7-20**14**; “China Thinks It Can Defeat America In Battle, But It Overlooks One Decisive Factor” July 7, 2014. The Week. David Axe, Military Correspondent And Journalist For The Week https://warisboring.com/china-thinks-it-can-defeat-america-in-battle-874bffe1b1b9#.xvktuyv8v

Fortunately for that liberal order, America possesses by far the world's most powerful submarine force — one poised to quickly sink any Chinese invasion fleet. In announcing its readiness to hold off the U.S. military, the PLA seems to have ignored Washington's **huge undersea advantage**. The Silent Service It's not surprising that Beijing would overlook America's subs. Most Americans overlook their own undersea fleet — and that's not entirely their own fault. The U.S. sub force takes pains to avoid media coverage in order to maximize its secrecy and stealth. "The submarine cruises the world's oceans unseen," the Navy stated on its Website. Unseen and unheard. That why the sub force calls itself the "Silent Service." The Navy has 74 submarines, 60 of which are attack or missile submarines optimized for finding and sinking other ships or blasting land targets. The balance is ballistic-missile boats that carry nuclear missiles and would not routinely participate in military campaigns short of an atomic World War III. Thirty-three of the attack and missile boats belong to the Pacific Fleet, with major bases in Washington State, California, Hawaii, and Guam. Deploying for six months or so roughly every year and a half, America's Pacific subs frequently stop over in Japan and South Korea and occasionally even venture under the Arctic ice. According to Adm. Cecil Haney, the former commander of Pacific Fleet subs, on any given day 17 boats are underway and eight are "forward-deployed," meaning they are on station in a potential combat zone. To the Pacific Fleet, that pretty much means waters near China. America has several submarine types. The numerous Los Angeles-class attack boats are Cold War stalwarts that are steadily being replaced by newer Virginia-class boats with improved stealth and sensors. The secretive Seawolfs, numbering just three — all of them in the Pacific — are big, fast, and more heavily armed than other subs. The Ohio-class missile submarines are former ballistic missile boats each packing 154 cruise missile. U.S. subs are, on average, bigger, faster, quieter, and more powerful than the rest of the world's subs. And there are more of them. The U.K. is building just seven new Astute attack boats. Russia aims to maintain around 12 modern attack subs. **China is struggling** to deploy a handful of rudimentary nuclear boats. Able to lurk silently under the waves and strike suddenly with torpedoes and missiles, submarines have tactical and strategic effect greatly disproportionate to their relatively small numbers. During the 1982 Falklands War, the British sub Conqueror torpedoed and sank the Argentine cruiser General Belgrano, killing 323 men. The sinking kept the rest of the Argentine fleet bottled up for the duration of the conflict. America's eight-at-a-time submarine picket in or near Chinese waters could be equally destructive to Chinese military plans, especially considering the PLA's limited anti-submarine skills. "Although China might control the surface of the sea around Taiwan, its ability to find and sink U.S. submarines will be extremely limited for the foreseeable future," Cliff testified. "Those submarines would likely be able to intercept and sink Chinese amphibious transports as they transited toward Taiwan." So it almost doesn't matter that a modernized PLA thinks it possesses the means to fight America above the waves, on land, and in the air. If it can't safely sail an invasion fleet as part of its territorial ambitions, **it can't achieve its strategic goals** — capturing Taiwan and or some island also claimed by a neighboring country — through overtly military means. That reality should inform Washington's own strategy. As the United States has already largely achieved the world order it struggled for over the last century, it need only preserve and defend this order. In other words, **America has the strategic high ground** against China, as the latter must attack and alter the world in order to get what it wants. In practical military terms, that means the Pentagon can **more or less ignore most of China's military capabilities**, **including those that appear to threaten traditional U.S. advantages in nukes**, air warfare, mechanized ground operations, and surface naval maneuvers. "

#### Otherwise, China seizes regional hegemony – causes water wars, war over Taiwan, South China Sea escalation, China-Japan war, and Indo-Sino war

John J. **Mearsheimer** 10-25-20**14**; R. Wendell Harrison Distinguished Service Professor of Political Science at the University Of Chicago. “Can China Rise Peacefully?” Excerpt From The Tragedy Of The Great Power Politics, Published By The National Interest

Although maximizing its prospects of survival is the principal reason China will seek to dominate Asia, there is another reason, related to Beijing’s territorial disputes with some of its neighbors. As Taylor Fravel points out, China has managed to settle most of its border conflicts since 1949—seventeen out of twenty-three—in good part because it has been willing to make some significant concessions to the other side. Nevertheless, China has six outstanding territorial disagreements, and there is little reason—at least at this juncture—to think the involved parties will find a clever diplomatic solution to them. Probably China’s most important dispute is over Taiwan, which Beijing is deeply committed to making an integral part of China once again. The present government on Taiwan, however, believes it is a sovereign country and has no interest in being reintegrated into China. Taiwanese leaders do not advertise their independence, for fear it will provoke China to invade Taiwan. In addition, China has ongoing disputes with Vietnam over control of the Paracel Islands in the South China Sea, and with Brunei, Malaysia, the Philippines, Taiwan, and Vietnam over the Spratly Islands, which are also located in the South China Sea. More generally, China maintains that it has sovereignty over almost all of the South China Sea, a claim disputed not only by its neighbors but by the United States as well. Farther to the north in the East China Sea, Beijing has a bitter feud with Japan over who controls a handful of small islands that Tokyo calls the Senkaku Islands and China labels the Diaoyu Islands. Finally, China has land border disputes with Bhutan and India. In fact, China and India fought a war over the disputed territory in 1962, and the two sides have engaged in provocative actions on numerous occasions since then. For example, New Delhi maintains there were 400 Chinese incursions into Indian-controlled territory during 2012 alone; and in mid-April 2013, Chinese troops—for the first time since 1986—refused to return to China after they were discovered on the Indian side of the Line of Actual Control. It appears that China has been stepping up its cross-border raids in recent years in response to increased Indian troop deployments and an accompanying growth in infrastructure. Given the importance of these territorial disputes to China, coupled with the apparent difficulty of resolving them through the give-and-take of diplomacy, the best way for China to settle them on favorable terms is probably via coercion. Specifically, **a China that is much more powerful than any of its neighbors will be in a good position to use military threats** to force the other side to accept a deal largely on China’s terms. And if that does not work, China can always unsheathe the sword and **go to war to get its way**. It seems likely that coercion or the actual use of force is the only plausible way China is going to regain Taiwan. In short, becoming a regional hegemon is the best pathway for China to resolve its various territorial disputes on favorable terms. It is worth noting that in addition to these territorial disputes, China might become embroiled in conflict with its neighbors over water. The Tibetan Plateau, which is located within China’s borders, is the third-largest repository of freshwater in the world, ranking behind the Arctic and Antarctica. Indeed, it is sometimes referred to as the “third pole.” It is also the main source of many of Asia’s great rivers, including the Brahmaputra, the Irrawaddy, the Mekong, the Salween, the Sutlej, the Yangtze, and the Yellow. Most of these rivers flow into neighboring countries, where they have a profound effect on the daily lives of many millions of people. In recent years, Beijing has shown much interest in rerouting water from these rivers to heavily populated areas in eastern and northern China. Toward that end, China has built canals, dams, irrigation systems, and pipelines. This plan is in its early stages and has yet to change the flow of these rivers in a meaningful fashion. But the potential for trouble is substantial, because the neighboring countries downstream are likely to see a marked reduction in their water supply over time, which could have devastating economic and social consequences. For example, the Chinese are interested in diverting the Brahmaputra River northward into the dying Yellow River. If this happens, it would cause major problems in India and especially in Bangladesh. China is also working to redirect water from the Mekong River, a diversion that is almost certain to cause big problems in Southeast Asian countries like Cambodia, Laos, Thailand, and Vietnam. In its efforts to begin rerouting the rivers flowing out of the Tibetan Plateau, **China has acted unilaterally and shown little interest in building international institutions that can help manage the ensuing problems**. Given that water is becoming an increasingly scarce resource in Asia, this **problem is likely to get worse with time** and, given the enormous stakes involved, might even lead to **war between China and one or more of its neighbors**.

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Frontlines

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#### War now is key – later wars with China cause a Space Pearl Harbor

Bill **Gertz**, 10-13-20**14**; senior editor of the Washington Free Beacon, former lecturer at Johns Hopkins School of Advanced International Studies, “China Military Buildup Shifts Balance of Power in Asia in Beijing’s Favor” http://freebeacon.com/national-security/china-military-buildup-shifts-balance-of-power-in-asia-in-beijings-favor/

China’s space warfare programs also are expanding significantly, according to the report. “The PLA is pursuing a broad counterspace program to **challenge U.S. information superiority in a conflict and disrupt or destroy U.S. satellites** if necessary,” the report said. Recent missile tests indicate Chinese anti-satellite weapons can destroy both low-altitude and high-altitude satellites, including strategic Global Positioning System satellites and communications and intelligence orbiters. “**China likely will be able to hold at risk U.S. national security satellites in every orbital regime in the next five to ten years**,” the report says. The report also revealed China last year conducted a space test of three small, maneuvering satellites, one of which is capable of grabbing and destroying orbiting satellites.

#### Inertia weapons will cause extinction

**Smith 03** (Wayne, author of multiple articles about space weaponization for the Guardian and Wired, “The Ultimate Weapon” http://www.spacedaily.com)

Whoever reaches deep space first will therefore be faced with the choice of utilising these 'inertia weapons' and the temptation will be great indeed. A big space rock could wipe out any enemy and the threat alone would equate to political clout beyond human comprehension. A city can after all be evacuated if a nuclear strike is threatened, but a country? If a nation chose to conquer the high ground of space then keeping everybody else out of it would be all that's necessary to ensure world dominance. Inertia weapons cannot proliferate unless more than one nation can actually reach them. The race to space could therefore end up being a race for control of the earth and solar system. I doubt any of this has escaped our leaders, both east and west. Would this be a bad thing? No worse than the first atomic bomb. The fact that it's unavoidable if we want space travel makes the question absurd. Why wouldn't a space faring nation seize a weapon ensuring it world dominance? Suppose this capability fell into the wrong hands though or was allowed to be owned by many spacefaring nations. Should that happen we might still see nuclear weapons become redundant and inertia weapons replace them as the newest threat to humanity. It would mean a new "Cold War" on a scale to dwarf the previous US and Russian one. A nuclear war despite all the bad press is in fact survivable. Not all human life would be eradicated and if all the nukes in the world were launched then we in the west might be set back a century. It would be nasty but not the end. It might seem like it but we would eventually recover. The same can't be said for a space war where mountains are directed at the earth.

#### China’s arsenal is becoming less vulnerable – modernization moves them to MIRVs – Nuclear War

Wendell **Minnick** 11-19-20**14**; Asia Bureau Chief For Defense News. US Report: China’s Nukes Getting Bigger and Better http://www.defensenews.com/story/defense/international/asia-pacific/2014/11/19/us-report-chinas-nukes-getting-bigger-and-better/19325953/

The report said **China’s growing nuclear warfare capabilities are ominous**. Over the next five years, China’s nuclear force will rapidly expand and modernize, providing China with an extensive range of military and foreign policy options and “potentially weakening U.S. extended deterrence, particularly with respect to Japan.**’ Over the next three- to five years, China’s nuclear program will also become more lethal and survivable** with the fielding of additional road-mobile nuclear missiles; five nuclear-powered ballistic missile submarines, each of which can carry 12 sea-launched intercontinental-range ballistic missiles (ICBM); and ICBMs armed with multiple independently targetable re-entry vehicles (MIRV). In 2013 the Pentagon reported that China’s nuclear arsenal consisted of only 50- to 75 ICBMs, with the number of ICBMs capable of reaching the United States could expand to more than 100 within the next 15 years. However, the report said some analysts assess China may be obscuring a much larger nuclear effort and have much larger stockpiles. China’s growing sea-based nuclear deterrent began in 2007 with the commissioning of three Jin-class ballistic missile submarines (SSBN) and the expected introduction of two additional SSBNs by 2020. The Jin’s SSBN’s JL–2 submarine-launched ballistic missile, appears to have reached initial operational capability, “giving China its first credible sea-based nuclear deterrent.” The JL–2’s range of 4,598 miles gives China the ability to “conduct nuclear strikes against Alaska if launched from waters near China; against Alaska and Hawaii if launched from waters south of Japan; against Alaska, Hawaii, and the western portion of the continental United States if launched from waters west of Hawaii; and against all 50 U.S. states if launched from waters east of Hawaii.” Besides submarines, the major concern in the report is China’s proliferation of road-mobile nuclear-capable ballistic missiles, such as the DF-31. In 2006, China deployed the DF–31 ICBMs and, in 2007, the more advanced DF–31A ICBMs. Road-mobile systems allow for faster launch times and make them difficult to locate and attack. “The DF–31A has a maximum range of at least 6,959 miles, allowing it to target most of the continental United States.” China is testing a new road-mobile ICBM, the DF–41. The DF–41, which could be deployed in 2015, could carry 10 MIRVs and have a range of 7,456 miles, “allowing it to target the entire continental United States.” China might have modified the DF–5 and the DF–31A to carry MIRVs. “China could use MIRVs to deliver nuclear warheads on major U.S. cities and military facilities as a means of overwhelming U.S. ballistic missile defenses.” The report cites a Chinese media depiction of the potential destructive effect of a MIRV-capable ICBM on Los Angeles. The article, “China Has Undersea Strategic Nuclear Deterrent Against United State for the First Time,” appeared in the Global Times on Oct. 13, 2013. The author, Pei Shen, included a map of Los Angeles under nuclear attack by a JL-2. “After a nuclear missile strikes a city, the radioactive dust produced by 20 warheads will be spread by the wind, forming a contaminated area for thousands of kilometers.” The article notes that the survival probability for people outdoors in a 746 to 870 mile radius was zero. “Based on the actual level of China’s one million tons TNT equivalent small nuclear warhead technology, the 12 JL–2 nuclear missiles carried by **one JIN nuclear submarine** could cause the destruction of five million to 12 million people, forming a very clear deterrent effect.”

**That ensures Indian doctrinal shift and Indo-Pak nuclear war**

Joshua **White** **and** Kyle **Deming** April 20**15**; Joshua T. White, Senior Advisor & Director for South Asian Affairs at the National Security Council, and Kyle Deming, MA Candidate in Security Studies at Georgetown, “DEPENDENT TRAJECTORIES: INDIA’S MIRV PROGRAM AND DETERRENCE STABILITY IN SOUTH ASIA”, <http://www.stimson.org/images/uploads/research-pdfs/Deterrence_Instability_WEB.pdf#page=177>

China’s reported flight-testing of a MIRVed DF-41 in December 2014 **makes it quite likely that India will eventually follow with its own flight-test of a MIRVed ballistic missile**. Apart from the reputational pressures to test, as described above, the Indian defense establishment will likely continue to justify the MIRV program on the basis of a competitive assessment of India’s capabilities vis-à- vis China, and the need for cost-effectively bolstering its deterrent capabilities. 186 At the same time, there are good reasons to be concerned about the implications of India’s MIRV development on parallel nuclear competitions in the region. These competitions are asymmetric: China hedges against perceived threats from the United States, India hedges against perceived threats from China, and Pakistan hedges against perceived threats from India.70 India thus finds itself in a position in which it could lose whatever gains it might realize from MIRVs in terms of establishing greater deterrence against China, by inadvertently accelerating parallel arms competitions with both Pakistan and China. In this context, Indian political leaders in particular would do well to consider three downside risks if they move forward with MIRV development, flight-testing, and eventual deployment. Encouraging Technological Path Dependence The first risk derives less from MIRVs themselves than from the precedent that is being set by allowing the Indian defense technical community to make decisions that de facto impact not only force posture but also nuclear signaling and doctrine. To be fair, this problem is not limited to one technology, and is not limited to India. The MIRV development process in India, however, has been emblematic of a wider dysfunction in the Indian defense system. Unless the Indian political leadership decides to provide more explicit guidance on the role and rationale for MIRVs in Indian strategic doctrine, they risk reinforcing the influence of the technical community in autonomously making technology decisions that have strategic import.71 For example, ample evidence documents the ways in which the American MIRV program was driven in large part by the technical community, and only later justified by policymakers.72 Despite the distinct differences between the Cold War and the triangular strategic dynamic in contemporary South Asia, there are useful analogues here. Retrospective accounts of the US program highlight the dangers of technological path dependence.73 In his classic 1975 analysis of the American MIRV development, Ted Greenwood observed that “political and bureaucratic forces,” particularly those in the defense research community, kept the MIRV program alive even as the strategic rationales for such a capability changed or were obviated over time.74 Others have documented the ways in which the US military could have achieved many of their desired targeting outcomes with MRVs, avoiding the negative signaling effects of MIRVs.75 Allowing technological development to outpace strategic thinking also creates a ratchet effect under which it becomes politically difficult not to deploy a technology once it has been developed, for fear of looking weak or diminishing one’s notional bargaining position vis-à-vis a competitor state. In the Cold War case, declassified US government documents demonstrate how the American leadership was reluctant to freeze MIRV development or negotiate restrictions on MIRVs for fear of giving up an already-acquired technological edge. Some of this fear was particular to the arms control negotiations at play in the SALT talks. More generally, however, by allowing the technical community to press ahead with development of MIRVs, US officials put themselves in a political position in which it became almost impossible to limit the deployment of the technology—either on the basis of sensible cost-benefit calculations, or bilateral negotiations—for fear of ceding “advantage.”76 Decades from now, Indian political leaders may look back on their development of MIRVed ballistic missiles with satisfaction. Or, like many American historians and strategists, they may wish that they had exercised more strategic oversight, restrained the technical community from proceeding on autopilot, and considered ways to dampen open-ended competition on strategic delivery systems. Reflecting on the quantitative and qualitative arms buildup by the Soviet Union in the 1970s and 1980s, American policymakers have in retrospect noted the influence of MIRVs as a contributing factor to the strategic competition. One former National Security Council staffer observed that the choice to abandon limitations on MIRVs “was a truly fateful decision that changed strategic relations, and changed them to the detriment of American security.”77 No less a figure than Henry Kissinger, who played a key role in removing MIRV limitations from the SALT I talks, later expressed regret about the decision, acknowledging “I wish I had thought through the implications of a MIRVed world more thoughtfully in 1969 and 1970 than I did.”78 Whether or not Indian political leaders ever face such regrets, they would be wise to consider the regional implications of moving forward with MIRVed missiles. In addition, they would benefit by approaching flight-testing with care, and by controlling public statements and other forms of signaling rather than leaving these to the whims of the defense research establishment. More broadly, it is not too late for the Indian political leadership to use the country’s MIRV development program as an example by which to signal their intent to more carefully exercise control over technological developments that might affect the contours of India’s strategic competition with its neighbors. Driving Open-Ended Competition with Pakistan Indian arguments about the value of MIRV development may have narrow appeal in the context of Sino-Indian competition, but are of more dubious merit in a wider assessment of India’s security environment. Although Indian officials may like to think that they can develop technologies with reference only to their competition with Beijing, **a decision by New Delhi to move ahead with MIRV flight-testing in response to China could have a uniformly negative impact on deterrence stability between India and Pakistan**. This may seem counterintuitive, given the delivery systems on which India is reported to be considering the addition of MIRV capabilities. For example, the Agni-V variant on which the DRDO plans to add MIRVs has a range of 5,000 km, and is plainly designed to range major Chinese cities. Notwithstanding this, Pakistani planners have reason to be concerned about the implications of India’s MIRV program. For while the DRDO has been clear that the initial MIRV development is focused on the Agni-V/VI, Pakistan might reasonably assume that MIRV technology would eventually be adapted for use on Indian missiles that have a smaller diameter, such as the intermediate-range Agni-II and -III, which presumably are the default deployed platforms for targeting Pakistan. Planning against worst-case scenarios, Pakistani strategists would also have to assume that, in a crisis, even long-range Indian MIRVed missiles could be redirected for deployment against Pakistani targets. It is therefore not surprising that, both in public writings and private conversations, Pakistani strategists have expressed concern about the Indian MIRV program as being “directed toward [both] China and Pakistan.”79 Pakistan’s likely response to continued Indian MIRV development would be to pursue countermeasures in the near-term that have the effect of accelerating the Indo-Pakistani arms competition presently underway. Pakistan might pursue one of several paths. One possibility would be to explore BMD technology, though this path is improbable given the enormous cost, technical hurdles, questionable effectiveness, and challenges posed by the exceptionally short warning times that obtain in the subcontinent. Alternately, some commentators have called for Pakistan to acquire MIRVs of its own.80 Islamabad might reckon that MIRVs — or even MRVs — could bolster the reliability of its second strike, or be used as necessary as a counterforce tool against fixed targets.81 This path is possible; however, MIRV technology is formidable and expensive. While China and Pakistan are known to have shared a long collaboration on ballistic missiles, and in theory China could share MIRV technology with Pakistan in an attempt to draw Indian defense resources away from the Sino-Indian theater, there has been no indication that Pakistan would consider MIRVs a priority area for technology transfer. If Islamabad were to conclude that India’s pursuit of MIRVs raises the overall risk to Pakistan of any future Indian BMD deployment, it may choose to accelerate technologies designed to counter missile defense. These may include increasingly sophisticated penetration aids for its existing ballistic missiles. A more asymmetric approach would be to focus on cruise missiles, which can be designed with a low radar signature, and can operate at an elevation and with an angle of attack that make them very difficult to counter with BMD systems. Specifically, Pakistan might choose to expand the number of nuclear-armed road-mobile Babur (Hatf-VII) cruise missiles in its arsenal, diversify the delivery platforms for its air-launched Ra’ad (Hatf-VIII) cruise missiles, or to develop longer-range or stealthier versions of the same. Hedging against real or perceived counterforce capabilities implied by India’s pursuit of MIRV technology, Pakistan might choose to bolster the survivability of its existing arsenal. Fearing an Indian surprise attack, Pakistan could place its nuclear weapons on a higher state of alert. A launch-on-warning posture would be a dangerous, technologically complicated, and largely unnecessary step, but this option could become attractive during a crisis in which India possesses MIRVs and BMD. Alternately, recognizing that MIRVed Indian missiles could be used to penetrate hard targets, Pakistan might elect to reallocate some of its warheads to more dispersed but less hardened sites — thus increasing security and safety risks.83 Even Pakistan’s less drastic alternatives, such as continuing its current path of adding more mobile ballistic- and cruise-missile delivery platforms, have obvious negative security implications. Pakistan has already flight-tested the 60-km-range Nasr (Hatf-IX) ballistic missile with “shoot and scoot” attributes designed for mobile deployment in a battlefield setting.84 As detailed elsewhere in this volume, short-range systems such as these raise a host of safety and security challenges, and present numerous operational and command and control risks in a crisis environment.85 **These risks would increase** — not linearly but **exponentially** — if Pakistan were to develop and deploy these systems at scale. Any move by India, therefore, that incentivizes Pakistan to divert a greater percentage of its warheads for use on mobile systems for reasons of survivability rather than simply targeting effectiveness would introduce new risks to the India-Pakistan security equation. Even if the optimists are correct and Indian MIRV development results in no overt change to Pakistani force-planning, it nonetheless could erode deterrence stability by introducing uncertainty about the long-term trajectory of the size of India’s nuclear arsenal. The Indian government has given no clear sign as to what it considers a sufficient arsenal to ensure credible deterrence, though independent analysts have proposed figures of 200 weapons or more.86 Pakistan already takes an expansive view of what constitutes the requirements for its own credible deterrence, and any suggestion that India may be reaching for some kind of parity with the Chinese nuclear arsenal is almost certain to negatively affect its own assumptions about fissile material and delivery-vehicle sufficiency.87 One mechanism by which Pakistan might address its uncertainty about India’s future arsenal would, of course, be to move forward with negotiations on a Fissile Material Cut-off Treaty (FMCT) in the UN Conference on Disarmament. An FMCT could prove to be a valuable stabilizing mechanism for the India-Pakistan and India-China deterrence relationships. Pakistan has blocked the start of international negotiations on the FMCT, and has been reluctant to negotiate a treaty that does not account for India’s existing fissile stocks. While Pakistan’s opposition to the FMCT may be more political than substantive, Indian MIRV development and flight-testing could in fact throw into sharper relief for Pakistan its decision about whether to pursue multilateral limitations on fissile material competition, or seek aggressively to match Indian production.88 Even with a multilateral agreement limiting fissile production, it would be naïve to suggest that India can do much in the near term to change Pakistan’s deep-seated and ideologically grounded fears of Indian aggression. For their part, Indian commentators are correct when they suggest that the Pakistan military routinely exaggerates Indian defense capabilities in order to justify its own conventional and nuclear modernization. Even so, this does not mean that Pakistan makes decisions about the size of its arsenal and its force posture entirely independently of India. Public statements by Indian scientists that promote the “force multiplier” aspect of MIRVs, their utility in destroying hardened targets, and their value in helping India to more efficiently compete with the Chinese nuclear arsenal — particularly in the absence of official correctives — quite understandably fuel Pakistani distrust of Indian nuclear “minimalism,” and make more likely a continued and open-ended competition in terms of fissile material production, warhead miniaturization, and diversity of delivery systems.89 Presaging a Doctrinal Shift to Counterforce Targeting The development, flight-testing, and eventual deployment of Indian MIRVs have the potential to presage troubling changes in Indian nuclear doctrine. This would not happen quickly, but over the medium term a tested and deployed MIRV capability could drive Indian planners to stray further from a “minimum credible deterrence” posture and toward more risky, destabilizing, and expensive counterforce targeting. In the near term, the most realistic rationales for MIRVs have to do with maintaining the survivability of the nuclear force, and maintaining credible countervalue retaliatory capabilities. With respect to the former, it is not clear whether Indian MIRVs would in fact increase survivability. As Vipin Narang and Chris Clary have argued, “dispersed single-warhead missiles seem more stable” than a MIRVed force — holding the number of warheads equal — because dispersal optimizes survivability.90 If, however, India holds or expects to hold surplus supplies of fissile material, or if the cost of deploying and securing delivery systems is substantial, MIRVs could represent a more efficient option to bolster survivability. The testing of Chinese MIRVs may, in addition, compel India to consider the survivability of its arsenal more seriously than it once did.91 Similarly, MIRVs could be seen as consistent with existing Indian nuclear doctrine insofar as they bolster the credibility of India’s commitment to massive retaliation in the event of a nuclear strike.92 This does not mean, however, that MIRVs are necessary to maintain the commitment. Beyond a certain point, increasing the number of potential countervalue targets is subject to diminishing returns as a means of signaling resolve. Over the medium term, MIRVs could have a more pernicious effect by putting pressure on Indian doctrine to shift away from countervalue targeting. India and China have heretofore adopted relatively stabilizing and minimalist nuclear postures.93 The continued flight-testing and introduction of MIRVs by China, and presumably at some future date by India, could give nuclear planners more options to consider with respect to counterforce targeting. These options may eventually put pressure on India’s commitment to massive retaliation. This could happen in two distinct but related ways. First, since MIRVed missiles have independently targetable warheads, they are well-suited for use against military installations or hardened sites as part of retaliatory strikes aimed at damage limitation. Any move by Indian strategists to plan against damage limitation objectives may not be destabilizing in the near term, but does point toward open-ended requirements for fissile material and strategic delivery systems. In short, once an objective is established to be able to target some or all of an adversary’s nuclear sites following a first strike by that adversary, the requirements become both dynamic and expansive. Second, the availability of potential counterforce platforms such as MIRVs could drive Indian strategists to more seriously consider limited nuclear options (LNOs). As is noted elsewhere in this volume, the Indian strategic community is already under pressure to find alternatives to a massive retaliation doctrine that is increasingly seen as lacking credibility.94 The allure of LNOs is that they could in theory deliver a proportional retaliatory nuclear response — likely against military or industrial targets — without escalating to all-out nuclear war. Planning for LNOs did not serve the United States or the Soviet Union well, and is neither a sensible nor a practical option for India’s nuclear planners in the near term. Doctrinally and operationally it is fraught with risks (e.g., what is proportional, and how is escalation controlled?). Numerically, it demands an expanded force posture. And practically, it requires sophisticated intelligence, surveillance, and reconnaissance (ISR) capabilities that India does not — and is unlikely to — possess in the next decade. All the same, the flight-testing and induction of MIRVs atop India’s ballistic missiles would undoubtedly provide a fillip to those in the Indian system who believe that a limited nuclear force focused on countervalue targeting and massive retaliation is untenable. As pressures grow for building out a force posture consistent with damage-limitation objectives and LNOs, the presence of MIRVs and other technologies well-suited to counterforce targeting will only make doctrinal revisions away from minimum credible deterrence more appealing. Looking further down the road, some commentators have suggested that Indian MIRV deployments could eventually lead to the most dramatic counterforce planning option, in which India develops the capability for a decisive first strike against one or more of its adversaries.95 In theory, MIRVs can reverse the exchange ratio — the number of adversary weapons destroyed by a missile in a counterforce strike — from favoring the defending side to favoring the attacking side.96 In the Cold War context, this created perverse incentives for the Soviet Union either to strike first in a crisis, or to build up its arsenal to overcome the new exchange ratio.97 The risk of New Delhi attempting a decisive first strike is almost certainly exaggerated given the historically cautious approach to nuclear planning that has pervaded Indian strategic culture.98 Such a shift with respect to planning against Pakistan, for example, would require abandoning India’s no first use doctrine; obtaining additional ISR capabilities to identify Pakistani nuclear assets both in peacetime and in a crisis environment; and risking horrific damage to Indian cities in the event of failure. The impact of MIRVs and other counterforce instruments may, however, be felt in terms of perceptions and planning. Even if Pakistan considers a dramatic shift in India’s nuclear posture to be unlikely, it may still worry that Indian MIRVs signal an intention to engage in counterforce targeting.99 Although the overall probability of an escalatory conflict might remain relatively low, Indian MIRV capability would in theory increase Pakistan’s incentives to engage in a decisive first strike of its own — something its doctrine does not preclude — since destroying multiple-warhead missiles is a higher-value proposition than single-warhead missiles. Speculations about first-strike risks, however remote or unlikely, do highlight a key challenge associated with MIRVs: it is practically impossible to signal to a potential adversary that they do not constitute the use of nuclear weapons in offensive, rather than defensive, ways. Both the academic literature and historical experience suggest that strategic competitions in which the offensive or defense posture of weapons is unclear are more likely to result in a security dilemma that drives an arms race and makes deterrence stability a chimera.100

#### They say counter-force increases hostility – no, China won’t be the one to go nuclear – it knows the US has escalation dominance

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A second reason for a relatively optimistic view of crisis stability is the Chinese view that China’s limited ambiguity over its no-first-use policy re- mains consistent with a clear firebreak between the use of conventional and nuclear weapons. China’s strategic community maintains that China would not use nuclear weapons first in a crisis or conflict. A recent textbook from AMS, for example, describes one of the Second Artillery’s main missions as “preventing (ezhi) an enemy from escalating a conventional war to a nuclear war.” 131 In the context of a Taiwan contingency, Maj. Gen. Yao Yunzhu explains that “it would be useless for China to deter U.S. conventional intervention by using China’s nuclear weapons**. It is the United States, not China, which has the nuclear capabilities to control and even dominate conflict escalation**.” 132 Some Chinese interlocutors also claimed that U.S. conventional superiority contributes to a clear conventional-nuclear firebreak, as the United States would always have conventional options to escalate a conflict and would therefore not need to resort to nuclear threats or use. 133 Most interlocutors ex- pressed confidence that the United States would have no reason to attack China’s nuclear arsenal with conventional weapons, but some interlocutors recognized that nuclear escalation control was a part of U.S. war planning, de- spite the United States’ conventional superiority. 134 If China views a conven- tional attack on its nuclear weapons or infrastructure as a first strike that would justify nuclear retaliation, its belief about a clear firebreak rests more on a belief that the United States will be deterred from initiating such an attack than it does on a principled constraint.

#### NFU ensures it won’t be ready or able to strike back – answers Manzo and Warden

\*NFU is no first use

Keir A. **Lieber** **and** Daryl G. **Press** 200**7**; Associate Professor in the Security Studies Program at Georgetown, and Associate Professor of Government at Dartmouth College Keir A. Lieber and Daryl G. Press, “US Nuclear Primacy and the Future of the Chinese Deterrent” China Security; Issue 5

Worries about crisis instability – and a nuclear war that neither side intends – can be set aside because of China’s commitment to the principal of NFU and its concomitant willingness to **leave its nuclear forces un-alerted and in a non-threatening posture during crises.** China’s official NFU pledge is sweeping, promising that “[a]t no time or under no circumstances would China first use nuclear weapons.” 16 This pledge is taken seriously by many knowledgeable observers of China, including Sun, Shen, and Li. Blair and Chen are adamant about China’s sincerity about NFU, noting that “China never wavered from its no- first-use (NFU) doctrine,” that Beijing’s “NFU commitment remains solid,” and that “**NFU will not be dislodged any time soon, if ever. It is a virtual canon of Chinese nuclear orthodoxy**.” 17

#### 95 percent chance we’d destroy China’s arsenal – proves we have higher than 50% chance

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The least bad option in the face of explicit nuclear threats or after a limited nuclear strike may be a counterforce attack to prevent further nuclear use. A counterforce strike could be conducted with either conventional or nuclear weapons, or a mix of the two. The attack could be limited to the enemy's nuclear delivery systems--for example, its bombers and missile silos--or a wider range of sites related to its nuclear program. Ideally, **a U.S. counterforce strike would completely destroy the enemy's nuclear forces**. But if an adversary had already launched a nuclear attack against the United States or its allies, a response that greatly reduced the adversary's nuclear force could save countless lives, and it could open the door to decisive military actions (such as conquest and regime change) to punish the enemy's leadership for using nuclear weapons. During the last decades of the Cold War, the nuclear arsenals of the United States and the Soviet Union were too big to be completely destroyed in a disarming strike, and, in any case, their nuclear delivery systems were not accurate enough to destroy large numbers of hardened targets. But the world has changed. Washington's potential adversaries field much smaller arsenals. Meanwhile, U.S. delivery systems have grown vastly more accurate. MODELING THE UNTHINKABLE To ILLUSTRATE the growth in U.S. counterforce capabilities, we applied a set of simple formulas that analysts have used for decades to estimate the effectiveness of counterforce attacks. **We modeled a U.S. strike on a small target set**: 20 intercontinental ballistic missiles (ICBMS) in hardened silos, **the approximate size of China's** current long-range, silo-based **missile force**. The analysis compared the capabilities of a 1985 Minuteman ICBM to those of a modern Trident II submarine-launched ballistic missile.[1] In 1985, a single U.S. ICBM warhead had less than a 60 percent chance of destroying a typical silo. Even if four or five additional warheads were used, the cumulative odds of destroying the silo would never exceed 90 percent because of the problem of "fratricide," whereby incoming warheads destroy each other. Beyond five warheads, adding more does no good. A probability of 90 percent might sound high, but it falls far short if the goal is to completely disarm an enemy: with a 90 percent chance of destroying each target, the odds of destroying all 20 are roughly 12 percent. In 1985, then, a U.S. ICBM attack had little chance of destroying even a small enemy nuclear arsenal. Today, a multiple-warhead attack on a single silo using a Trident II missile would have a roughly 99 percent chance of destroying it, and the probability that a barrage would destroy all 20 targets is **well above 95 percent**. Given the accuracy of the U.S. military's current delivery systems, the only question is target identification: silos that can be found can be destroyed. During the Cold War, the United States worked hard to pinpoint Soviet nuclear forces, with great success. Locating potential adversaries' small nuclear arsenals is undoubtedly a top priority for U.S. intelligence today.

#### No way a second strike works - Tech gaps, expertise and organizational structure of the PLA means we’d take them out first

**Kazianis** February 20, 20**15** (Harry J [Senior Fellow for Defense Policy at the Center for the National Interest  and a Senior Fellow at the China Policy Institute]; Revealed: Why China Would Lose a War against America; nationalinterest.org/feature/revealed-why-china-would-lose-war-against-america-12288?page=3; kdf)

This article examines the challenges China would face against the U.S. in a conflict--but in a very broad, top-down, and practical sort of way. This time I will avoid the fun but sometimes easy to pick apart scenario-style type of analysis. While Beijing certainly has the tools to get the job done when it comes to a war with Washington, the challenges China would face in such a conflict would be immense— and many of them could be quite basic. The PRC would be going to war against the premier military power on the planet— some would argue the most lethal fighting machine of all time. In this essay we will review some of the important foundational reasons why many argue, quite convincingly, that the U.S. would very well defeat China in a war. Yes, Beijing keeps cranking out those whizz-bang high-tech weapons of war like sausages. China has those shiny, new carrier-killer missiles that everyone is always fretting about (including yours truly.) Its building aircraft carriers, 5th generation fighters, multiple types of cruise missiles, nuclear and ultra quiet diesel submarines, drones, mines and so on. It all looks really good— at least on paper. When it comes to a war with the U.S. how well would Beijing be able to use all that stuff? The real question seems pretty simple: yes, China is certainly developing all the military and technology goodies to field a potent force. However, how well can it operate all that equipment in the pressure filled situation of a war? Sure, Beijing is certainly developing a world-class military, but can its soldiers operate all that equipment competently? Just how well trained are they? You can have the best military in the world but if you don’t know how to use it, well, you get the idea. Opinions are mixed on this for sure. Ian Easton from Project 2049, in a piece for The Diplomat, reminds us of the possible capabilities, nature, and mission of the PLA— and its certainly not all about America: The state of “software” (military training and readiness) is truly astounding. At one military exercise in the summer of 2012, a strategic PLA unit, stressed out by the hard work of handling warheads in an underground bunker complex, actually had to take time out of a 15-day wartime simulation for movie nights and karaoke parties. In fact, by day nine of the exercise, a “cultural performance troupe” (common PLA euphemism for song-and-dance girls) had to be brought into the otherwise sealed facility to entertain the homesick soldiers… While recent years have witnessed a tremendous Chinese propaganda effort aimed at convincing the world that the PRC is a serious military player that is owed respect, outsiders often forget that **China does not even have a professional military.** The PLA, unlike the armed forces of the United States, Japan, South Korea, Taiwan and other regional heavyweights, is by definition not a professional fighting force. Rather, it is a “party army,” the armed wing of the Chinese Communist Party (CCP). Indeed, all career officers in the PLA are members of the CCP and all units at the company level and above have political officers assigned to enforce party control. Likewise, all important decisions in the PLA are made by Communist Party committees that are dominated by political officers, not by operators. So how much would the above impact the much-needed rapid reaction time essential to make quick decisions once the bombs begin to drop in a war with America? Is China up to the challenge? While the above exercise in 2012 could be just one isolated incident, the idea of the PLA being a “party army” is a very important reality. What does this all mean in a war with America? Your guess is as good as mine. How Good Can Beijing Fight “Jointly”? There is no better way to make a modern military even more deadly than to fight “jointly.” Sharing intelligence and waging war by coordinating your forces across multiple domains (think air, sea, space, cyber and land) is the best way to achieve hard fought military objectives and is the ultimate force multiplier. It is something America and many other great powers are putting a lot of time, energy and resources into. China is also working towards such a goal. And while sources vary on how well Beijing could wage a major joint operation against a determined foe— especially against the U.S.— many have their doubts. In a recent report by the RAND Corporation titled “China’s Incomplete Military Modernization” the authors have some serious doubts when it comes to Beijing’s joint warfighting capabilities: Many Chinese strategists identify the inability to conduct integrated joint operations at the desired level of competence as the central problem China faces as it aspires to project combat power beyond its land borders. Indeed, Chinese sources highlight several problems that contribute to the PLA’s shortcomings in the area of joint operations and suggest that there is still a large gap between China and developed countries’ militaries, especially the United States. In the same paragraph, the authors of the study also discuss issues with training, reinforcing my earlier point: PLA publications also highlight continuing shortfalls in training, despite years of effort to make training more realistic and more valuable in terms of addressing shortcomings and improving the PLA’s operational capabilities. In addition, the publications point to persistent challenges in combat support and combat service support functions and forces, as reflected by frequent discussions of shortcomings in logistics and maintenance capabilities that appear in PLA newspaper reports and journal articles. Can They Innovate? When it comes to military technology, keeping ahead of the curve is key. America seems to crank out new defense tech all the time. The question over the long-term for China will be how well it can keep up in the tech game. Specifically, can Beijing develop advanced military systems indigenously? This might be the biggest challenge for China when we look out over the long term (10-20 years in the future) in a conflict with America. We all know China has a great track record of, well, permanently “borrowing” the designs of many of the world’s best combat systems. However, one can only gain so much by playing copy cat. Even a copy needs to be reverse engineered— and sometimes that isn’t easy. A poor copy would do China no good on the battlefield. Over the next decade Beijing will need to develop ingeniously many of the world’s most sought after pieces of military hardware and other intricate systems that make them go— things like jet engines— that are not easy to produce with precision and that they currently struggle with. China will also need to get good at maintaining and improving world class equipment under the worst of conditions. While it might not be sexy, innovation and keeping ahead of the curve would pay dividends in a war against America when we look out over the long term. Only time will tell if Beijing is up to the challenge. The Last Time China Fought a Major War Was the Year I was Born: 1979 The best way to get good at anything is too actually go out and do it— and do it a lot. The challenge for China is that you can wargame all you want but unless you have experienced actual combat there will always be a learning curve. And the curve for China is steep: Beijing has not not fought a major war since its roughly one month skirmish with Vietnam in 1979. Now, while knowledge from a conflict thirty-five years ago might not translate into success against America in a war, having little to no combat experience could pose some challenges for China. Washington going into any conflict with Beijing would certainly have a decisive advantage when it comes to war fighting. While the conflicts America has fought over the last twenty-five years were not A2/AD battle royals, the last few decades has offered the U.S. military the capability to test out new systems and tactics, fix things that aren’t working when it comes to combat operations, and make important adjustments for future scenarios. For example, the U.S. did not need to send F-22s into Syria, however, the opportunity to learn on the battlefield and gain experience is of vital importance and likely the main reason for doing so. And it is one area that would have to be considered a major advantage in a battle against China.

#### A counterforce strike on China would knock out their nuclear force with 700 casualties max

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The revolution in accuracy is producing an even more momentous change: it is becoming possible for the United States to conduct low- yield nuclear counterforce strikes that inflict relatively few casualties. A U.S. Department of Defense computer model, called the Hazard Prediction and Assessment Capability (HPAC), estimates the dispersion of deadly radioactive fallout in a given region after a nuclear detonation. The software uses the warhead's explosive power, the height of the burst, and data about local weather and demographics to estimate how much fallout would be generated, where it would blow, and how many people it would injure or kill. HPAC results can be chilling. In 2006, a team of nuclear weapons analysts from the Federation of American Scientists (FAS) and the Natural Resources Defense Council (NRDC) used HPAC to estimate the consequences of a U.S. nuclear attack using high-yield warheads against China's ICBM field. Even though China's silos are located in the countryside, the model predicted that the fallout would blow; over a large area, killing 3-4 million people. U.S. counterforce capabilities were useless, the study implied, because even a limited strike would kill an unconscionable number of civilians. But the United States can already conduct nuclear counterforce strikes at a tiny fraction of the human devastation that the FAS/NRDC study predicted, and small additional improvements to the U.S. force could dramatically reduce the potential collateral damage even further. The United States' nuclear weapons are now so accurate that it can conduct successful counterforce attacks using the smallest-yield warheads in the arsenal, rather than the huge warheads that the FAS/NRDC simulation modeled. And to further reduce the fallout, the weapons can be set to detonate as airbursts, which would allow most of the radiation to dissipate in the upper atmosphere. We ran multiple HPAC scenarios against the identical target set used in the FAS/NRDC study but modeled low-yield airbursts rather than high-yield groundbursts. The fatality estimates plunged from 3-4 million **to less than 700**--a figure comparable to the number of civilians reportedly killed since 2006 in Pakistan by U.S. drone strikes. One should be skeptical about the results of any model that depends on unpredictable factors, such as wind speed and direction. But in the scenarios we modeled, the area of lethal fallout was so small that very few civilians would have become ill or died, regardless of which way the wind blew.

#### Nuclear winter is a myth based on bad science – directly answers edwards

**Seitz, ‘06** (Russell, Harvard University Center for International Affairs visiting scholar, "The' Nuclear Winter ' Meltdown; Photoshopping the Apocalypse," adamant.typepad.com/seitz/2006/12/preherein\_honor.html, accessed 9-25-11)

The recent winter solstice witnessed a 'Carl Sagan Blog-a-thon' . So in celebration of Al Gore's pal, the late author of The Cold And The Dark there follows The Wall Street Journal's warmly cautionary Cold War reminder of how a campaign for the Nobel Peace prize on the Nuclear Freeze ticket devolved into a joke played at the expense of climate modeling's street cred on the eve of the global warming debate :The Melting of 'Nuclear Winter' All that remains of Sagan's Big Chill are curves such as this , Fig3tempprecip\_4\_2 but history is full of prophets of doom who fail to deliver, not all are without honor in their own land. The 1983 'Nuclear Winter " papers in Science were so politicized that even the eminently liberal President of The Council for a Liveable World called "The worst example ofthe misrepesentation of science to the public in my memory." Among the authors was Stanford President Donald Kennedy. Today he edits Science , the nation's major arbiter of climate science--and policy. Below, a case illustrating the mid-range of the ~.7 to ~1.6 degree C maximum cooling the 2006 studies suggest is superimposed in color on the Blackly Apocalyptic predictions published in Science Vol. 222, 1983 . They're worth comparing, because the range of soot concentrations in the new models overlaps with cases assumed to have dire climatic consequences in the widely publicized 1983 scenarios --Meltdownofttaps "Apocalyptic predictions require, to be taken seriously,higher standards of evidence than do assertions on other matters where the stakes are not as great." wrote Sagan in Foreign Affairs , Winter 1983 -84. But that "**evidence**" **was never forthcoming**. 'Nuclear Winter' never existed outside of a computer except as air-brushed animation commissioned by the a PR firm - Porter Novelli Inc. Yet Sagan predicted "the extinction of the human species " as temperatures plummeted 35 degrees C and the world froze in the aftermath of a nuclear holocaust. Last year, Sagan's cohort tried to reanimate the ghost in a machine anti-nuclear activists invoked in the depths of the Cold War, by re-running equally arbitrary scenarios on a modern interactive Global Circulation Model. But the Cold War is history in more ways than one. It is a credit to post-modern computer climate simulations that they **do not reproduce the apocalyptic results** of what Sagan oxymoronically termed "a sophisticated one dimensional model." The subzero 'baseline case' has melted down into a tepid 1.3 degrees of average cooling- grey skies do not a Ragnarok make. What remains is **just not the stuff that End of the World myths are made of**. It is hard to exaggerate how seriously " nuclear winter "was once taken by policy analysts who ought to have known better. Many were taken aback by the sheer force of Sagan's rhetoric Remarkably, Science's news coverage of the new results fails to graphically compare them with the old ones Editor Kennedy and other recent executives of the American Association for the Advancement of Science, once proudly co-authored and helped to publicize. You can't say they didn't try to reproduce this Cold War icon. Once again, soot from imaginaryPropaganda\_penguin\_1\_1 software materializes in midair by the megaton , flying higher than Mount Everest . This is not physics, but a crude exercise in ' garbage in, gospel out' parameter forcing designed to maximize and extend the cooling an aeosol can generate, by sparing it from realistic attrition by rainout in the lower atmosphere. Despite decades of progress in modeling atmospheric chemistry , there is none in this computer simulation, and ignoring photochemistry further extends its impact. Fortunately , the history of science is as hard to erase as it is easy to ignore. Their past mastery of semantic agression cannot spare the authors of "Nuclear Winter Lite " direct comparison of their new results and their old. Dark smoke clouds in the lower atmosphere don't last long enough to spread across the globe. Cloud droplets and rainfall remove them, rapidly washing them out of the sky in a matter of days to weeks- not long enough to sustain a global pall. Real world weather brings down particles much as soot is scrubbed out of power plant smoke by the water sprays in smoke stack scrubbers Robock acknowledges this- not even a single degree of cooling results when soot is released at lower elevations in he models . The workaround is to inject the imaginary aerosol at truly Himalayan elevations - pressure altitudes of 300 millibar and higher , where the computer model's vertical transport function modules pass it off to their even higher neighbors in the stratosphere , where it does not rain and particles linger.. The new studies like the old suffer from the disconnect between a desire to paint the sky black and the vicissitudes of natural history. As with many exercise in worst case models both at invoke rare phenomena as commonplace, claiming it prudent to assume the worst. But the real world is subject to Murphy's lesser known second law- if everything must go wrong, don't bet on it. In 2006 as in 1983 firestorms and forest fires that send smoke into the stratosphere rise to alien prominence in the modelers re-imagined world , but i the real one remains a very different place, where though every month sees forest fires burning areas the size of cities - 2,500 hectares or larger , stratospheric smoke injections arise but once in a blue moon. So how come these neo-nuclear winter models feature so much smoke so far aloft for so long? The answer is simple- **the modelers intervened**. Turning off vertical transport algorithms may make Al Gore happy- he has bet on reviving the credibility Sagan's ersatz apocalypse , but there is no denying that in some of these scenarios human desire, not physical forces accounts for the vertical hoisting of millions of tons of mass ten vertical kilometers into the sky.to the level at which the models take over , with results at once predictable --and arbitrary. This is not physics, it is computer gamesmanship carried over to a new generation of X-Box.

#### War inevitable --- 2 conflict zones

#### a) SCS

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Though little talked about in the West, many **Chinese officials have long felt that war between Washington and Beijing is inevitable**. A rising power, the thinking goes, will always challenge a dominant one. Of course, some analysts dismiss this idea; the costs of such a conflict would be too high, and the U.S., which is far stronger militarily, would almost certainly win. Yet history is riddled with wars that appeared to make no sense. Today, the maritime dispute between the U.S. and China has become the most contentious issue in their complex relationship, and **conditions seem ripe for a military clash between the two countries**: This summer, an international court will rule on a Philippine challenge to China's claim to the disputed waterway, and for the first time, Beijing appears poised to send nuclear-armed submarines into the South China Sea. On one level, the dispute is about territory. Beijing insists that nearly the entire sea—from its islands, reefs and submerged rocks to its fish and underwater energy reserves—historically belongs to China. The U.S., however, regards the South China Sea as international waters—at least until rival claims by several neighboring countries can be resolved. Until then, Washington contends, only the U.S Navy can be trusted to ensure freedom of navigation in those waters, which include some of the world’s most important shipping lanes. The larger conflict, however, revolves around China’s emergence as a major regional power and America’s insistence on policing the Pacific. It also involves the system of international rules and institutions that Washington and its allies crafted after World War II. Chinese President Xi Jinping has repeatedly complained this system favors America and prevents Beijing from taking its rightful place as the dominant power in Asia. And at a time when China’s economy is slowing, Xi is under increased pressure at home to find other ways to demonstrate China’s advances under his leadership. A clear reassertion of Beijing’s control over the South China Sea after more than a century of foreign domination would do just that. Failure to do so, however, analysts say, could threaten Xi’s grip on power. China says its claim to the South China Sea dates back thousands of years. But historians date the modern dispute back to about 130 years ago, when various European countries took over the waterway. Over the next century, the sea formed part of French Indochina, then Japan’s Pacific empire, and after World War II, the U.S. Navy acted as its caretaker. But in the 1970s, oil and gas deposits were discovered under the sea bed, prompting the Philippines, Vietnam, Malaysia, Brunei and Taiwan to stake their own claims to the region. Those countries have since seized 45 islands. Since 2012, China has occupied seven shoals and, through land reclamation operations, turned them into man-made islands with landing strips and missile defenses. “History matters,” says Fu Ying, a former ambassador to Britain and now spokeswoman for the National People’s Congress, China’s parliament. In recounting China’s litany of foreign invasions, beginning in the 1840s with Britain’s seizure of Hong Kong and ending with Japan’s brutal occupation of China before and during World War II, she notes that the Chinese remain acutely aware of the country’s past humiliation. “The people won’t tolerate it if we lose territory yet again,” says Fu. “We’ve lost enough.” Wary of an armed conflict, U.S. President Barack Obama has responded by quietly permitting Beijing to operate in the South China Sea while building up military and economic relations with China’s neighbors in hopes of weakening its influence. And despite the administration’s repeated vows to sail continuously through the disputed waters, it has mostly avoided them. “We’ve done a lot sailing in the South China Sea but in areas that aren’t claimed by anybody,” says Bryan Clark, a retired Navy veteran who last served as a special assistant to the chief of naval operations. Critics of Obama, including Republican Senator John McCain of Arizona, say such nonintrusive voyages easily could be construed as acknowledgement that China has a valid claim. McCain and others have called on Obama to get tougher with Beijing and conduct more aggressive operations in the disputed waters. China’s neighbors, such as Vietnam and the Philippines, have also urged Obama to be more aggressive, and they’ve offered U.S. forces the use of their bases. But there’s a limit to how far they want Washington to go. While they may resent Beijing’s bullying, China is their largest trading partner and a major source of funding for infrastructure projects such as roads, railways and ports. Bilahari Kausikan, a senior Singaporean diplomat, notes that small Southeast Asian countries must navigate a path between China and the United States by constantly playing one against the other, hedging their bets and sometimes deferring to Washington or Beijing. “We see nothing contradictory in pursuing all...[of these] courses of action simultaneously,” he says. The Obama administration is bracing for trouble this summer when an international court in the Hague rules on the Philippine challenge to China’s claim to the South China Sea. The ruling is expected to go against Beijing, which has declared it won’t accept any decision from the court. China says it’s willing to talk one-on-one with the Philippines, as well as with the other countries with rival claims—a position that would give Beijing a clear advantage over its smaller neighbors. The U.S. wants China to negotiate with these claimants collectively, and Beijing has told Washington to butt out. “Our view is the U.S. is stoking the dispute and using it to bring its forces back the Pacific,” said Chinese Vice Foreign Minister Liu Zhenmin during a meeting with a small group of visiting American and British reporters in May. For U.S. officials, the big question is how China will react to an unfavorable ruling. Some fear Beijing will step up its land reclamation operations. Others worry it will restrict the air space over the South China Sea and begin intercepting unidentified aircraft—a policy that would force it to confront the U.S.’s spy flights. Or they could do something even more provocative. “The [Chinese] military is urging the leadership to put it in fifth gear, step on the gas and give the finger to the world,” says a U.S. official, asking for anonymity under diplomatic protocol. Obama has warned Xi that such measures would prompt a substantial American response, including military action. Some regional experts say Beijing may counter an unfavorable ruling with tough rhetoric to mollify people at home, but take no actions before September, when China hosts the G-20 summit. But once that gathering is over, **the dispute could become much more volatile**. U.S. officials are particularly worried about a Chinese plan to send submarines armed with nuclear missiles into the South China Sea for the first time. Chinese military officials argue the submarine patrols are needed to respond to two major U.S. military moves: plans to station a defense system in South Korea that can intercept missiles fired from both North Korea and China, and the Pentagon’s development of ballistic missiles with new hypersonic warheads that can strike targets anywhere in the world in less than an hour. Taken together, Chinese military officials say, these American weapons threaten to neutralize China’s land-based nuclear arsenal, leaving Beijing no choice but to turn to its submarines to retaliate for any nuclear attack. **The implications would be enormous**. Until now, China’s nuclear deterrent has centered on its land-based missiles, which are kept without fuel and remain separate from their nuclear warheads. That means the country’s political leadership must give several orders before the missiles are fueled, armed and ready to launch, giving everyone time to reconsider. Nuclear missiles on a submarine are always armed and ready. U.S. and Chinese warships operate in uncomfortably close proximity in the South China Sea. Add submarine operations to the mix, and the chances of an accident multiply despite protocols meant to minimize the risk of collisions. Submarines are stealthy vessels, and China is unlikely to provide their locations to the Americans. That means the U.S. Navy will send more spy ships into the South China Sea in an effort to track the subs. “With the U.S. Navy sailing more and more in the area, there’s a high possibility there will be an accident,” says a high-ranking Chinese officer, who spoke anonymously to address sensitive security issues.

#### b) Taiwan and territory

Erik **Slavin** 8-26-20**14**: Reporting on Japan, Asia-Pacific, USNavy for Stars and Stripes. “On Land and Sea, China’s Nuclear Capability Growing” http://www.stripes.com/news/on-land-and-sea-china-s-nuclear-capability-growing-1.299381

Although China and the U.S. haven’t approached anything like the hostility of the U.S.-Soviet Cold War, divisions remain that could lead to armed conflict. Taiwan-China relations have improved markedly, but the U.S. is still obligated by law to defend Taiwan, and China maintains that it cannot remain separate forever. The U.S. also has said it would defend the Japanese-administered Senkaku Islands, claimed as the Diaoyu Islands by China. The islands have been the center of repeated air and sea incidents between Japan and China, though none ever turned into firefights.

#### Even if they win China war isn’t inevitable or they can solve it, you should still prefer first-striking China in the short-term because the inevitable collapse of US capabilities in relation to China causes major wars, Russia war, Iranian strikes on Israel, collapse of NATO, artic war and food insecurity.

**Eaglen and McGrath 11 -** research fellow for national security (Eaglen) and former naval officer and director (McGrath) (Mackenzie Eaglen and Bryan McGrath, “Thinking About a Day Without Sea Power: Implications for U.S. Defense Policy”, Heritage Foundation, 5/16/2011, http://www.heritage.org/research/reports/2011/05/thinking-about-a-day-without-sea-power-implications-for-us-defense-policy)//MBB

Global Implications. Under a scenario of dramatically reduced naval power, the United States would cease to be active in any international alliances. While it is reasonable to assume that land and air forces would be similarly reduced in this scenario, the lack of credible maritime capability to move their bulk and establish forward bases would render these forces irrelevant, even if the Army and Air Force were retained at today’s levels. In Iraq and Afghanistan today, 90 percent of material arrives by sea, although material bound for Afghanistan must then make a laborious journey by land into theater. China’s claims on the South China Sea, previously disputed by virtually all nations in the region and routinely contested by U.S. and partner naval forces, are accepted as a fait accompli, effectively turning the region into a “Chinese lake.” China establishes expansive oil and gas exploration with new deepwater drilling technology and secures its local sea lanes from intervention. Korea, unified in 2017 after the implosion of the North, signs a mutual defense treaty with China and solidifies their relationship. Japan is increasingly isolated and in 2020–2025 executes long-rumored plans to create an indigenous nuclear weapons capability.[11] By 2025, Japan has 25 mobile nuclear-armed missiles ostensibly targeting China, toward which Japan’s historical animus remains strong. China’s entente with Russia leaves the Eurasian landmass dominated by Russia looking west and China looking east and south. Each cedes a sphere of dominance to the other and remains largely unconcerned with the events in the other’s sphere. Worldwide, trade in foodstuffs collapses. Expanding populations in the Middle East increase pressure on their governments, which are already stressed as the breakdown in world trade disproportionately affects food importers. Piracy increases worldwide, driving food transportation costs even higher. In the Arctic, Russia aggressively asserts its dominance and effectively shoulders out other nations with legitimate claims to seabed resources. No naval power exists to counter Russia’s claims. India, recognizing that its previous role as a balancer to China has lost relevance with the retrenchment of the Americans, agrees to supplement Chinese naval power in the Indian Ocean and Persian Gulf to protect the flow of oil to Southeast Asia. In exchange, China agrees to exercise increased influence on its client state Pakistan. The great typhoon of 2023 strikes Bangladesh, killing 23,000 people initially, and 200,000 more die in the subsequent weeks and months as the international community provides little humanitarian relief. Cholera and malaria are epidemic. Iran dominates the Persian Gulf and is a nuclear power. Its navy aggressively patrols the Gulf while the Revolutionary Guard Navy harasses shipping and oil infrastructure to force Gulf Cooperation Council (GCC) countries into Tehran’s orbit. Russia supplies Iran with a steady flow of military technology and nuclear industry expertise. Lacking a regional threat, the Iranians happily control the flow of oil from the Gulf and benefit economically from the “protection” provided to other GCC nations. In Egypt, the decade-long experiment in participatory democracy ends with the ascendance of the Muslim Brotherhood in a violent seizure of power. The United States is identified closely with the previous coalition government, and riots break out at the U.S. embassy. Americans in Egypt are left to their own devices because the U.S. has no forces in the Mediterranean capable of performing a noncombatant evacuation when the government closes major airports. Led by Iran, a coalition of Egypt, Syria, Jordan, and Iraq attacks Israel. Over 300,000 die in six months of fighting that includes a limited nuclear exchange between Iran and Israel. Israel is defeated, and the State of Palestine is declared in its place. Massive “refugee” camps are created to house the internally displaced Israelis, but a humanitarian nightmare ensues from the inability of conquering forces to support them. The NATO alliance is shattered. The security of European nations depends increasingly on the lack of external threats and the nuclear capability of France, Britain, and Germany, which overcame its reticence to military capability in light of America’s retrenchment. Europe depends for its energy security on Russia and Iran, which control the main supply lines and sources of oil and gas to Europe. Major European nations stand down their militaries and instead make limited contributions to a new EU military constabulary force. No European nation maintains the ability to conduct significant out-of-area operations, and Europe as a whole maintains little airlift capacity. Implications for America’s Economy. If the United States slashed its Navy and ended its mission as a guarantor of the free flow of transoceanic goods and trade, globalized world trade would decrease substantially. As early as 1890, noted U.S. naval officer and historian Alfred Thayer Mahan described the world’s oceans as a “great highway…a wide common,” underscoring the long-running importance of the seas to trade.[12] Geographically organized trading blocs develop as the maritime highways suffer from insecurity and rising fuel prices. Asia prospers thanks to internal trade and Middle Eastern oil, Europe muddles along on the largesse of Russia and Iran, and the Western Hemisphere declines to a “new normal” with the exception of energy-independent Brazil. For America, Venezuelan oil grows in importance as other supplies decline. Mexico runs out of oil—as predicted—when it fails to take advantage of Western oil technology and investment. Nigerian output, which for five years had been secured through a partnership of the U.S. Navy and Nigerian maritime forces, is decimated by the bloody civil war of 2021. Canadian exports, which a decade earlier had been strong as a result of the oil shale industry, decline as a result of environmental concerns in Canada and elsewhere about the “fracking” (hydraulic fracturing) process used to free oil from shale. State and non-state actors increase the hazards to seaborne shipping, which are compounded by the necessity of traversing key chokepoints that are easily targeted by those who wish to restrict trade. These chokepoints include the Strait of Hormuz, which Iran could quickly close to trade if it wishes. More than half of the world’s oil is transported by sea. “From 1970 to 2006, the amount of goods transported via the oceans of the world…increased from 2.6 billion tons to 7.4 billion tons, an increase of over 284%.”[13] In 2010, “$40 billion dollars [sic] worth of oil passes through the world’s geographic ‘chokepoints’ on a daily basis…not to mention $3.2 trillion…annually in commerce that moves underwater on transoceanic cables.”[14] These quantities of goods simply cannot be moved by any other means. Thus, a reduction of sea trade reduces overall international trade. U.S. consumers face a greatly diminished selection of goods because domestic production largely disappeared in the decades before the global depression. As countries increasingly focus on regional rather than global trade, costs rise and Americans are forced to accept a much lower standard of living. Some domestic manufacturing improves, but at significant cost. In addition, shippers avoid U.S. ports due to the onerous container inspection regime implemented after investigators discover that the second dirty bomb was smuggled into the U.S. in a shipping container on an innocuous Panamanian-flagged freighter. As a result, American consumers bear higher shipping costs. The market also constrains the variety of goods available to the U.S. consumer and increases their cost. A Congressional Budget Office (CBO) report makes this abundantly clear. A one-week shutdown of the Los Angeles and Long Beach ports would lead to production losses of $65 million to $150 million (in 2006 dollars) per day. A three-year closure would cost $45 billion to $70 billion per year ($125 million to $200 million per day). Perhaps even more shocking, the simulation estimated that employment would shrink by approximately 1 million jobs.[15] These estimates demonstrate the effects of closing only the Los Angeles and Long Beach ports. On a national scale, such a shutdown would be catastrophic. The Government Accountability Office notes that: [O]ver 95 percent of U.S. international trade is transported by water[;] thus, the safety and economic security of the United States depends in large part on the secure use of the world’s seaports and waterways. A successful attack on a major seaport could potentially result in a dramatic slowdown in the international supply chain with impacts in the billions of dollars.[16]

War Good

### 2NC --- Space

#### War now is key – later wars with China cause a Space Pearl Harbor

Bill **Gertz**, 10-13-20**14**; senior editor of the Washington Free Beacon, former lecturer at Johns Hopkins School of Advanced International Studies, “China Military Buildup Shifts Balance of Power in Asia in Beijing’s Favor” http://freebeacon.com/national-security/china-military-buildup-shifts-balance-of-power-in-asia-in-beijings-favor/

China’s space warfare programs also are expanding significantly, according to the report. “The PLA is pursuing a broad counterspace program to **challenge U.S. information superiority in a conflict and disrupt or destroy U.S. satellites** if necessary,” the report said. Recent missile tests indicate Chinese anti-satellite weapons can destroy both low-altitude and high-altitude satellites, including strategic Global Positioning System satellites and communications and intelligence orbiters. “**China likely will be able to hold at risk U.S. national security satellites in every orbital regime in the next five to ten years**,” the report says. The report also revealed China last year conducted a space test of three small, maneuvering satellites, one of which is capable of grabbing and destroying orbiting satellites.

#### Inertia weapons will cause extinction

**Smith 03** (Wayne, author of multiple articles about space weaponization for the Guardian and Wired, “The Ultimate Weapon” http://www.spacedaily.com)

Whoever reaches deep space first will therefore be faced with the choice of utilising these 'inertia weapons' and the temptation will be great indeed. A big space rock could wipe out any enemy and the threat alone would equate to political clout beyond human comprehension. A city can after all be evacuated if a nuclear strike is threatened, but a country? If a nation chose to conquer the high ground of space then keeping everybody else out of it would be all that's necessary to ensure world dominance. Inertia weapons cannot proliferate unless more than one nation can actually reach them. The race to space could therefore end up being a race for control of the earth and solar system. I doubt any of this has escaped our leaders, both east and west. Would this be a bad thing? No worse than the first atomic bomb. The fact that it's unavoidable if we want space travel makes the question absurd. Why wouldn't a space faring nation seize a weapon ensuring it world dominance? Suppose this capability fell into the wrong hands though or was allowed to be owned by many spacefaring nations. Should that happen we might still see nuclear weapons become redundant and inertia weapons replace them as the newest threat to humanity. It would mean a new "Cold War" on a scale to dwarf the previous US and Russian one. A nuclear war despite all the bad press is in fact survivable. Not all human life would be eradicated and if all the nukes in the world were launched then we in the west might be set back a century. It would be nasty but not the end. It might seem like it but we would eventually recover. The same can't be said for a space war where mountains are directed at the earth.

### 2NC --- Indopak

#### China’s arsenal is becoming less vulnerable – modernization moves them to MIRVs – Nuclear War

Wendell **Minnick** 11-19-20**14**; Asia Bureau Chief For Defense News. US Report: China’s Nukes Getting Bigger and Better http://www.defensenews.com/story/defense/international/asia-pacific/2014/11/19/us-report-chinas-nukes-getting-bigger-and-better/19325953/

The report said **China’s growing nuclear warfare capabilities are ominous**. Over the next five years, China’s nuclear force will rapidly expand and modernize, providing China with an extensive range of military and foreign policy options and “potentially weakening U.S. extended deterrence, particularly with respect to Japan.**’ Over the next three- to five years, China’s nuclear program will also become more lethal and survivable** with the fielding of additional road-mobile nuclear missiles; five nuclear-powered ballistic missile submarines, each of which can carry 12 sea-launched intercontinental-range ballistic missiles (ICBM); and ICBMs armed with multiple independently targetable re-entry vehicles (MIRV). In 2013 the Pentagon reported that China’s nuclear arsenal consisted of only 50- to 75 ICBMs, with the number of ICBMs capable of reaching the United States could expand to more than 100 within the next 15 years. However, the report said some analysts assess China may be obscuring a much larger nuclear effort and have much larger stockpiles. China’s growing sea-based nuclear deterrent began in 2007 with the commissioning of three Jin-class ballistic missile submarines (SSBN) and the expected introduction of two additional SSBNs by 2020. The Jin’s SSBN’s JL–2 submarine-launched ballistic missile, appears to have reached initial operational capability, “giving China its first credible sea-based nuclear deterrent.” The JL–2’s range of 4,598 miles gives China the ability to “conduct nuclear strikes against Alaska if launched from waters near China; against Alaska and Hawaii if launched from waters south of Japan; against Alaska, Hawaii, and the western portion of the continental United States if launched from waters west of Hawaii; and against all 50 U.S. states if launched from waters east of Hawaii.” Besides submarines, the major concern in the report is China’s proliferation of road-mobile nuclear-capable ballistic missiles, such as the DF-31. In 2006, China deployed the DF–31 ICBMs and, in 2007, the more advanced DF–31A ICBMs. Road-mobile systems allow for faster launch times and make them difficult to locate and attack. “The DF–31A has a maximum range of at least 6,959 miles, allowing it to target most of the continental United States.” China is testing a new road-mobile ICBM, the DF–41. The DF–41, which could be deployed in 2015, could carry 10 MIRVs and have a range of 7,456 miles, “allowing it to target the entire continental United States.” China might have modified the DF–5 and the DF–31A to carry MIRVs. “China could use MIRVs to deliver nuclear warheads on major U.S. cities and military facilities as a means of overwhelming U.S. ballistic missile defenses.” The report cites a Chinese media depiction of the potential destructive effect of a MIRV-capable ICBM on Los Angeles. The article, “China Has Undersea Strategic Nuclear Deterrent Against United State for the First Time,” appeared in the Global Times on Oct. 13, 2013. The author, Pei Shen, included a map of Los Angeles under nuclear attack by a JL-2. “After a nuclear missile strikes a city, the radioactive dust produced by 20 warheads will be spread by the wind, forming a contaminated area for thousands of kilometers.” The article notes that the survival probability for people outdoors in a 746 to 870 mile radius was zero. “Based on the actual level of China’s one million tons TNT equivalent small nuclear warhead technology, the 12 JL–2 nuclear missiles carried by **one JIN nuclear submarine** could cause the destruction of five million to 12 million people, forming a very clear deterrent effect.”

#### That ensures Indian doctrinal shift and Indo-Pak nuclear war

Joshua **White** **and** Kyle **Deming** April 20**15**; Joshua T. White, Senior Advisor & Director for South Asian Affairs at the National Security Council, and Kyle Deming, MA Candidate in Security Studies at Georgetown, “DEPENDENT TRAJECTORIES: INDIA’S MIRV PROGRAM AND DETERRENCE STABILITY IN SOUTH ASIA”, <http://www.stimson.org/images/uploads/research-pdfs/Deterrence_Instability_WEB.pdf#page=177>

China’s reported flight-testing of a MIRVed DF-41 in December 2014 **makes it quite likely that India will eventually follow with its own flight-test of a MIRVed ballistic missile**. Apart from the reputational pressures to test, as described above, the Indian defense establishment will likely continue to justify the MIRV program on the basis of a competitive assessment of India’s capabilities vis-à- vis China, and the need for cost-effectively bolstering its deterrent capabilities. 186 At the same time, there are good reasons to be concerned about the implications of India’s MIRV development on parallel nuclear competitions in the region. These competitions are asymmetric: China hedges against perceived threats from the United States, India hedges against perceived threats from China, and Pakistan hedges against perceived threats from India.70 India thus finds itself in a position in which it could lose whatever gains it might realize from MIRVs in terms of establishing greater deterrence against China, by inadvertently accelerating parallel arms competitions with both Pakistan and China. In this context, Indian political leaders in particular would do well to consider three downside risks if they move forward with MIRV development, flight-testing, and eventual deployment. Encouraging Technological Path Dependence The first risk derives less from MIRVs themselves than from the precedent that is being set by allowing the Indian defense technical community to make decisions that de facto impact not only force posture but also nuclear signaling and doctrine. To be fair, this problem is not limited to one technology, and is not limited to India. The MIRV development process in India, however, has been emblematic of a wider dysfunction in the Indian defense system. Unless the Indian political leadership decides to provide more explicit guidance on the role and rationale for MIRVs in Indian strategic doctrine, they risk reinforcing the influence of the technical community in autonomously making technology decisions that have strategic import.71 For example, ample evidence documents the ways in which the American MIRV program was driven in large part by the technical community, and only later justified by policymakers.72 Despite the distinct differences between the Cold War and the triangular strategic dynamic in contemporary South Asia, there are useful analogues here. Retrospective accounts of the US program highlight the dangers of technological path dependence.73 In his classic 1975 analysis of the American MIRV development, Ted Greenwood observed that “political and bureaucratic forces,” particularly those in the defense research community, kept the MIRV program alive even as the strategic rationales for such a capability changed or were obviated over time.74 Others have documented the ways in which the US military could have achieved many of their desired targeting outcomes with MRVs, avoiding the negative signaling effects of MIRVs.75 Allowing technological development to outpace strategic thinking also creates a ratchet effect under which it becomes politically difficult not to deploy a technology once it has been developed, for fear of looking weak or diminishing one’s notional bargaining position vis-à-vis a competitor state. In the Cold War case, declassified US government documents demonstrate how the American leadership was reluctant to freeze MIRV development or negotiate restrictions on MIRVs for fear of giving up an already-acquired technological edge. Some of this fear was particular to the arms control negotiations at play in the SALT talks. More generally, however, by allowing the technical community to press ahead with development of MIRVs, US officials put themselves in a political position in which it became almost impossible to limit the deployment of the technology—either on the basis of sensible cost-benefit calculations, or bilateral negotiations—for fear of ceding “advantage.”76 Decades from now, Indian political leaders may look back on their development of MIRVed ballistic missiles with satisfaction. Or, like many American historians and strategists, they may wish that they had exercised more strategic oversight, restrained the technical community from proceeding on autopilot, and considered ways to dampen open-ended competition on strategic delivery systems. Reflecting on the quantitative and qualitative arms buildup by the Soviet Union in the 1970s and 1980s, American policymakers have in retrospect noted the influence of MIRVs as a contributing factor to the strategic competition. One former National Security Council staffer observed that the choice to abandon limitations on MIRVs “was a truly fateful decision that changed strategic relations, and changed them to the detriment of American security.”77 No less a figure than Henry Kissinger, who played a key role in removing MIRV limitations from the SALT I talks, later expressed regret about the decision, acknowledging “I wish I had thought through the implications of a MIRVed world more thoughtfully in 1969 and 1970 than I did.”78 Whether or not Indian political leaders ever face such regrets, they would be wise to consider the regional implications of moving forward with MIRVed missiles. In addition, they would benefit by approaching flight-testing with care, and by controlling public statements and other forms of signaling rather than leaving these to the whims of the defense research establishment. More broadly, it is not too late for the Indian political leadership to use the country’s MIRV development program as an example by which to signal their intent to more carefully exercise control over technological developments that might affect the contours of India’s strategic competition with its neighbors. Driving Open-Ended Competition with Pakistan Indian arguments about the value of MIRV development may have narrow appeal in the context of Sino-Indian competition, but are of more dubious merit in a wider assessment of India’s security environment. Although Indian officials may like to think that they can develop technologies with reference only to their competition with Beijing, **a decision by New Delhi to move ahead with MIRV flight-testing in response to China could have a uniformly negative impact on deterrence stability between India and Pakistan**. This may seem counterintuitive, given the delivery systems on which India is reported to be considering the addition of MIRV capabilities. For example, the Agni-V variant on which the DRDO plans to add MIRVs has a range of 5,000 km, and is plainly designed to range major Chinese cities. Notwithstanding this, Pakistani planners have reason to be concerned about the implications of India’s MIRV program. For while the DRDO has been clear that the initial MIRV development is focused on the Agni-V/VI, Pakistan might reasonably assume that MIRV technology would eventually be adapted for use on Indian missiles that have a smaller diameter, such as the intermediate-range Agni-II and -III, which presumably are the default deployed platforms for targeting Pakistan. Planning against worst-case scenarios, Pakistani strategists would also have to assume that, in a crisis, even long-range Indian MIRVed missiles could be redirected for deployment against Pakistani targets. It is therefore not surprising that, both in public writings and private conversations, Pakistani strategists have expressed concern about the Indian MIRV program as being “directed toward [both] China and Pakistan.”79 Pakistan’s likely response to continued Indian MIRV development would be to pursue countermeasures in the near-term that have the effect of accelerating the Indo-Pakistani arms competition presently underway. Pakistan might pursue one of several paths. One possibility would be to explore BMD technology, though this path is improbable given the enormous cost, technical hurdles, questionable effectiveness, and challenges posed by the exceptionally short warning times that obtain in the subcontinent. Alternately, some commentators have called for Pakistan to acquire MIRVs of its own.80 Islamabad might reckon that MIRVs — or even MRVs — could bolster the reliability of its second strike, or be used as necessary as a counterforce tool against fixed targets.81 This path is possible; however, MIRV technology is formidable and expensive. While China and Pakistan are known to have shared a long collaboration on ballistic missiles, and in theory China could share MIRV technology with Pakistan in an attempt to draw Indian defense resources away from the Sino-Indian theater, there has been no indication that Pakistan would consider MIRVs a priority area for technology transfer. If Islamabad were to conclude that India’s pursuit of MIRVs raises the overall risk to Pakistan of any future Indian BMD deployment, it may choose to accelerate technologies designed to counter missile defense. These may include increasingly sophisticated penetration aids for its existing ballistic missiles. A more asymmetric approach would be to focus on cruise missiles, which can be designed with a low radar signature, and can operate at an elevation and with an angle of attack that make them very difficult to counter with BMD systems. Specifically, Pakistan might choose to expand the number of nuclear-armed road-mobile Babur (Hatf-VII) cruise missiles in its arsenal, diversify the delivery platforms for its air-launched Ra’ad (Hatf-VIII) cruise missiles, or to develop longer-range or stealthier versions of the same. Hedging against real or perceived counterforce capabilities implied by India’s pursuit of MIRV technology, Pakistan might choose to bolster the survivability of its existing arsenal. Fearing an Indian surprise attack, Pakistan could place its nuclear weapons on a higher state of alert. A launch-on-warning posture would be a dangerous, technologically complicated, and largely unnecessary step, but this option could become attractive during a crisis in which India possesses MIRVs and BMD. Alternately, recognizing that MIRVed Indian missiles could be used to penetrate hard targets, Pakistan might elect to reallocate some of its warheads to more dispersed but less hardened sites — thus increasing security and safety risks.83 Even Pakistan’s less drastic alternatives, such as continuing its current path of adding more mobile ballistic- and cruise-missile delivery platforms, have obvious negative security implications. Pakistan has already flight-tested the 60-km-range Nasr (Hatf-IX) ballistic missile with “shoot and scoot” attributes designed for mobile deployment in a battlefield setting.84 As detailed elsewhere in this volume, short-range systems such as these raise a host of safety and security challenges, and present numerous operational and command and control risks in a crisis environment.85 **These risks would increase** — not linearly but **exponentially** — if Pakistan were to develop and deploy these systems at scale. Any move by India, therefore, that incentivizes Pakistan to divert a greater percentage of its warheads for use on mobile systems for reasons of survivability rather than simply targeting effectiveness would introduce new risks to the India-Pakistan security equation. Even if the optimists are correct and Indian MIRV development results in no overt change to Pakistani force-planning, it nonetheless could erode deterrence stability by introducing uncertainty about the long-term trajectory of the size of India’s nuclear arsenal. The Indian government has given no clear sign as to what it considers a sufficient arsenal to ensure credible deterrence, though independent analysts have proposed figures of 200 weapons or more.86 Pakistan already takes an expansive view of what constitutes the requirements for its own credible deterrence, and any suggestion that India may be reaching for some kind of parity with the Chinese nuclear arsenal is almost certain to negatively affect its own assumptions about fissile material and delivery-vehicle sufficiency.87 One mechanism by which Pakistan might address its uncertainty about India’s future arsenal would, of course, be to move forward with negotiations on a Fissile Material Cut-off Treaty (FMCT) in the UN Conference on Disarmament. An FMCT could prove to be a valuable stabilizing mechanism for the India-Pakistan and India-China deterrence relationships. Pakistan has blocked the start of international negotiations on the FMCT, and has been reluctant to negotiate a treaty that does not account for India’s existing fissile stocks. While Pakistan’s opposition to the FMCT may be more political than substantive, Indian MIRV development and flight-testing could in fact throw into sharper relief for Pakistan its decision about whether to pursue multilateral limitations on fissile material competition, or seek aggressively to match Indian production.88 Even with a multilateral agreement limiting fissile production, it would be naïve to suggest that India can do much in the near term to change Pakistan’s deep-seated and ideologically grounded fears of Indian aggression. For their part, Indian commentators are correct when they suggest that the Pakistan military routinely exaggerates Indian defense capabilities in order to justify its own conventional and nuclear modernization. Even so, this does not mean that Pakistan makes decisions about the size of its arsenal and its force posture entirely independently of India. Public statements by Indian scientists that promote the “force multiplier” aspect of MIRVs, their utility in destroying hardened targets, and their value in helping India to more efficiently compete with the Chinese nuclear arsenal — particularly in the absence of official correctives — quite understandably fuel Pakistani distrust of Indian nuclear “minimalism,” and make more likely a continued and open-ended competition in terms of fissile material production, warhead miniaturization, and diversity of delivery systems.89 Presaging a Doctrinal Shift to Counterforce Targeting The development, flight-testing, and eventual deployment of Indian MIRVs have the potential to presage troubling changes in Indian nuclear doctrine. This would not happen quickly, but over the medium term a tested and deployed MIRV capability could drive Indian planners to stray further from a “minimum credible deterrence” posture and toward more risky, destabilizing, and expensive counterforce targeting. In the near term, the most realistic rationales for MIRVs have to do with maintaining the survivability of the nuclear force, and maintaining credible countervalue retaliatory capabilities. With respect to the former, it is not clear whether Indian MIRVs would in fact increase survivability. As Vipin Narang and Chris Clary have argued, “dispersed single-warhead missiles seem more stable” than a MIRVed force — holding the number of warheads equal — because dispersal optimizes survivability.90 If, however, India holds or expects to hold surplus supplies of fissile material, or if the cost of deploying and securing delivery systems is substantial, MIRVs could represent a more efficient option to bolster survivability. The testing of Chinese MIRVs may, in addition, compel India to consider the survivability of its arsenal more seriously than it once did.91 Similarly, MIRVs could be seen as consistent with existing Indian nuclear doctrine insofar as they bolster the credibility of India’s commitment to massive retaliation in the event of a nuclear strike.92 This does not mean, however, that MIRVs are necessary to maintain the commitment. Beyond a certain point, increasing the number of potential countervalue targets is subject to diminishing returns as a means of signaling resolve. Over the medium term, MIRVs could have a more pernicious effect by putting pressure on Indian doctrine to shift away from countervalue targeting. India and China have heretofore adopted relatively stabilizing and minimalist nuclear postures.93 The continued flight-testing and introduction of MIRVs by China, and presumably at some future date by India, could give nuclear planners more options to consider with respect to counterforce targeting. These options may eventually put pressure on India’s commitment to massive retaliation. This could happen in two distinct but related ways. First, since MIRVed missiles have independently targetable warheads, they are well-suited for use against military installations or hardened sites as part of retaliatory strikes aimed at damage limitation. Any move by Indian strategists to plan against damage limitation objectives may not be destabilizing in the near term, but does point toward open-ended requirements for fissile material and strategic delivery systems. In short, once an objective is established to be able to target some or all of an adversary’s nuclear sites following a first strike by that adversary, the requirements become both dynamic and expansive. Second, the availability of potential counterforce platforms such as MIRVs could drive Indian strategists to more seriously consider limited nuclear options (LNOs). As is noted elsewhere in this volume, the Indian strategic community is already under pressure to find alternatives to a massive retaliation doctrine that is increasingly seen as lacking credibility.94 The allure of LNOs is that they could in theory deliver a proportional retaliatory nuclear response — likely against military or industrial targets — without escalating to all-out nuclear war. Planning for LNOs did not serve the United States or the Soviet Union well, and is neither a sensible nor a practical option for India’s nuclear planners in the near term. Doctrinally and operationally it is fraught with risks (e.g., what is proportional, and how is escalation controlled?). Numerically, it demands an expanded force posture. And practically, it requires sophisticated intelligence, surveillance, and reconnaissance (ISR) capabilities that India does not — and is unlikely to — possess in the next decade. All the same, the flight-testing and induction of MIRVs atop India’s ballistic missiles would undoubtedly provide a fillip to those in the Indian system who believe that a limited nuclear force focused on countervalue targeting and massive retaliation is untenable. As pressures grow for building out a force posture consistent with damage-limitation objectives and LNOs, the presence of MIRVs and other technologies well-suited to counterforce targeting will only make doctrinal revisions away from minimum credible deterrence more appealing. Looking further down the road, some commentators have suggested that Indian MIRV deployments could eventually lead to the most dramatic counterforce planning option, in which India develops the capability for a decisive first strike against one or more of its adversaries.95 In theory, MIRVs can reverse the exchange ratio — the number of adversary weapons destroyed by a missile in a counterforce strike — from favoring the defending side to favoring the attacking side.96 In the Cold War context, this created perverse incentives for the Soviet Union either to strike first in a crisis, or to build up its arsenal to overcome the new exchange ratio.97 The risk of New Delhi attempting a decisive first strike is almost certainly exaggerated given the historically cautious approach to nuclear planning that has pervaded Indian strategic culture.98 Such a shift with respect to planning against Pakistan, for example, would require abandoning India’s no first use doctrine; obtaining additional ISR capabilities to identify Pakistani nuclear assets both in peacetime and in a crisis environment; and risking horrific damage to Indian cities in the event of failure. The impact of MIRVs and other counterforce instruments may, however, be felt in terms of perceptions and planning. Even if Pakistan considers a dramatic shift in India’s nuclear posture to be unlikely, it may still worry that Indian MIRVs signal an intention to engage in counterforce targeting.99 Although the overall probability of an escalatory conflict might remain relatively low, Indian MIRV capability would in theory increase Pakistan’s incentives to engage in a decisive first strike of its own — something its doctrine does not preclude — since destroying multiple-warhead missiles is a higher-value proposition than single-warhead missiles. Speculations about first-strike risks, however remote or unlikely, do highlight a key challenge associated with MIRVs: it is practically impossible to signal to a potential adversary that they do not constitute the use of nuclear weapons in offensive, rather than defensive, ways. Both the academic literature and historical experience suggest that strategic competitions in which the offensive or defense posture of weapons is unclear are more likely to result in a security dilemma that drives an arms race and makes deterrence stability a chimera.100

War Inevitable

### 2NC --- Areas

#### a) SCS

Jonathan **Broder** 6-22-20**16**; writes about defense and foreign policy for Newsweek from Washington. He's been covering national security issues for more than two decades, including 12 years as a writer and senior editor at Congressional Quarterly “The ‘Inevitable War’ Between the U.S. and China” http://www.newsweek.com/south-china-sea-war-nuclear-submarines-china-united-states-barack-obama-xi-473428

Though little talked about in the West, many **Chinese officials have long felt that war between Washington and Beijing is inevitable**. A rising power, the thinking goes, will always challenge a dominant one. Of course, some analysts dismiss this idea; the costs of such a conflict would be too high, and the U.S., which is far stronger militarily, would almost certainly win. Yet history is riddled with wars that appeared to make no sense. Today, the maritime dispute between the U.S. and China has become the most contentious issue in their complex relationship, and **conditions seem ripe for a military clash between the two countries**: This summer, an international court will rule on a Philippine challenge to China's claim to the disputed waterway, and for the first time, Beijing appears poised to send nuclear-armed submarines into the South China Sea. On one level, the dispute is about territory. Beijing insists that nearly the entire sea—from its islands, reefs and submerged rocks to its fish and underwater energy reserves—historically belongs to China. The U.S., however, regards the South China Sea as international waters—at least until rival claims by several neighboring countries can be resolved. Until then, Washington contends, only the U.S Navy can be trusted to ensure freedom of navigation in those waters, which include some of the world’s most important shipping lanes. The larger conflict, however, revolves around China’s emergence as a major regional power and America’s insistence on policing the Pacific. It also involves the system of international rules and institutions that Washington and its allies crafted after World War II. Chinese President Xi Jinping has repeatedly complained this system favors America and prevents Beijing from taking its rightful place as the dominant power in Asia. And at a time when China’s economy is slowing, Xi is under increased pressure at home to find other ways to demonstrate China’s advances under his leadership. A clear reassertion of Beijing’s control over the South China Sea after more than a century of foreign domination would do just that. Failure to do so, however, analysts say, could threaten Xi’s grip on power. China says its claim to the South China Sea dates back thousands of years. But historians date the modern dispute back to about 130 years ago, when various European countries took over the waterway. Over the next century, the sea formed part of French Indochina, then Japan’s Pacific empire, and after World War II, the U.S. Navy acted as its caretaker. But in the 1970s, oil and gas deposits were discovered under the sea bed, prompting the Philippines, Vietnam, Malaysia, Brunei and Taiwan to stake their own claims to the region. Those countries have since seized 45 islands. Since 2012, China has occupied seven shoals and, through land reclamation operations, turned them into man-made islands with landing strips and missile defenses. “History matters,” says Fu Ying, a former ambassador to Britain and now spokeswoman for the National People’s Congress, China’s parliament. In recounting China’s litany of foreign invasions, beginning in the 1840s with Britain’s seizure of Hong Kong and ending with Japan’s brutal occupation of China before and during World War II, she notes that the Chinese remain acutely aware of the country’s past humiliation. “The people won’t tolerate it if we lose territory yet again,” says Fu. “We’ve lost enough.” Wary of an armed conflict, U.S. President Barack Obama has responded by quietly permitting Beijing to operate in the South China Sea while building up military and economic relations with China’s neighbors in hopes of weakening its influence. And despite the administration’s repeated vows to sail continuously through the disputed waters, it has mostly avoided them. “We’ve done a lot sailing in the South China Sea but in areas that aren’t claimed by anybody,” says Bryan Clark, a retired Navy veteran who last served as a special assistant to the chief of naval operations. Critics of Obama, including Republican Senator John McCain of Arizona, say such nonintrusive voyages easily could be construed as acknowledgement that China has a valid claim. McCain and others have called on Obama to get tougher with Beijing and conduct more aggressive operations in the disputed waters. China’s neighbors, such as Vietnam and the Philippines, have also urged Obama to be more aggressive, and they’ve offered U.S. forces the use of their bases. But there’s a limit to how far they want Washington to go. While they may resent Beijing’s bullying, China is their largest trading partner and a major source of funding for infrastructure projects such as roads, railways and ports. Bilahari Kausikan, a senior Singaporean diplomat, notes that small Southeast Asian countries must navigate a path between China and the United States by constantly playing one against the other, hedging their bets and sometimes deferring to Washington or Beijing. “We see nothing contradictory in pursuing all...[of these] courses of action simultaneously,” he says. The Obama administration is bracing for trouble this summer when an international court in the Hague rules on the Philippine challenge to China’s claim to the South China Sea. The ruling is expected to go against Beijing, which has declared it won’t accept any decision from the court. China says it’s willing to talk one-on-one with the Philippines, as well as with the other countries with rival claims—a position that would give Beijing a clear advantage over its smaller neighbors. The U.S. wants China to negotiate with these claimants collectively, and Beijing has told Washington to butt out. “Our view is the U.S. is stoking the dispute and using it to bring its forces back the Pacific,” said Chinese Vice Foreign Minister Liu Zhenmin during a meeting with a small group of visiting American and British reporters in May. For U.S. officials, the big question is how China will react to an unfavorable ruling. Some fear Beijing will step up its land reclamation operations. Others worry it will restrict the air space over the South China Sea and begin intercepting unidentified aircraft—a policy that would force it to confront the U.S.’s spy flights. Or they could do something even more provocative. “The [Chinese] military is urging the leadership to put it in fifth gear, step on the gas and give the finger to the world,” says a U.S. official, asking for anonymity under diplomatic protocol. Obama has warned Xi that such measures would prompt a substantial American response, including military action. Some regional experts say Beijing may counter an unfavorable ruling with tough rhetoric to mollify people at home, but take no actions before September, when China hosts the G-20 summit. But once that gathering is over, **the dispute could become much more volatile**. U.S. officials are particularly worried about a Chinese plan to send submarines armed with nuclear missiles into the South China Sea for the first time. Chinese military officials argue the submarine patrols are needed to respond to two major U.S. military moves: plans to station a defense system in South Korea that can intercept missiles fired from both North Korea and China, and the Pentagon’s development of ballistic missiles with new hypersonic warheads that can strike targets anywhere in the world in less than an hour. Taken together, Chinese military officials say, these American weapons threaten to neutralize China’s land-based nuclear arsenal, leaving Beijing no choice but to turn to its submarines to retaliate for any nuclear attack. **The implications would be enormous**. Until now, China’s nuclear deterrent has centered on its land-based missiles, which are kept without fuel and remain separate from their nuclear warheads. That means the country’s political leadership must give several orders before the missiles are fueled, armed and ready to launch, giving everyone time to reconsider. Nuclear missiles on a submarine are always armed and ready. U.S. and Chinese warships operate in uncomfortably close proximity in the South China Sea. Add submarine operations to the mix, and the chances of an accident multiply despite protocols meant to minimize the risk of collisions. Submarines are stealthy vessels, and China is unlikely to provide their locations to the Americans. That means the U.S. Navy will send more spy ships into the South China Sea in an effort to track the subs. “With the U.S. Navy sailing more and more in the area, there’s a high possibility there will be an accident,” says a high-ranking Chinese officer, who spoke anonymously to address sensitive security issues.

#### b) Taiwan and territory

Erik **Slavin** 8-26-20**14**: Reporting on Japan, Asia-Pacific, USNavy for Stars and Stripes. “On Land and Sea, China’s Nuclear Capability Growing” http://www.stripes.com/news/on-land-and-sea-china-s-nuclear-capability-growing-1.299381

Although China and the U.S. haven’t approached anything like the hostility of the U.S.-Soviet Cold War, divisions remain that could lead to armed conflict. Taiwan-China relations have improved markedly, but the U.S. is still obligated by law to defend Taiwan, and China maintains that it cannot remain separate forever. The U.S. also has said it would defend the Japanese-administered Senkaku Islands, claimed as the Diaoyu Islands by China. The islands have been the center of repeated air and sea incidents between Japan and China, though none ever turned into firefights.

### 2NC --- Do it Anyway

#### Even if they win China war isn’t inevitable or they can solve it, you should still prefer first-striking China in the short-term because the inevitable collapse of US capabilities in relation to China causes major wars, Russia war, Iranian strikes on Israel, collapse of NATO, artic war and food insecurity.

**Eaglen and McGrath 11 -** research fellow for national security (Eaglen) and former naval officer and director (McGrath) (Mackenzie Eaglen and Bryan McGrath, “Thinking About a Day Without Sea Power: Implications for U.S. Defense Policy”, Heritage Foundation, 5/16/2011, http://www.heritage.org/research/reports/2011/05/thinking-about-a-day-without-sea-power-implications-for-us-defense-policy)//MBB

Global Implications. Under a scenario of dramatically reduced naval power, the United States would cease to be active in any international alliances. While it is reasonable to assume that land and air forces would be similarly reduced in this scenario, the lack of credible maritime capability to move their bulk and establish forward bases would render these forces irrelevant, even if the Army and Air Force were retained at today’s levels. In Iraq and Afghanistan today, 90 percent of material arrives by sea, although material bound for Afghanistan must then make a laborious journey by land into theater. China’s claims on the South China Sea, previously disputed by virtually all nations in the region and routinely contested by U.S. and partner naval forces, are accepted as a fait accompli, effectively turning the region into a “Chinese lake.” China establishes expansive oil and gas exploration with new deepwater drilling technology and secures its local sea lanes from intervention. Korea, unified in 2017 after the implosion of the North, signs a mutual defense treaty with China and solidifies their relationship. Japan is increasingly isolated and in 2020–2025 executes long-rumored plans to create an indigenous nuclear weapons capability.[11] By 2025, Japan has 25 mobile nuclear-armed missiles ostensibly targeting China, toward which Japan’s historical animus remains strong. China’s entente with Russia leaves the Eurasian landmass dominated by Russia looking west and China looking east and south. Each cedes a sphere of dominance to the other and remains largely unconcerned with the events in the other’s sphere. Worldwide, trade in foodstuffs collapses. Expanding populations in the Middle East increase pressure on their governments, which are already stressed as the breakdown in world trade disproportionately affects food importers. Piracy increases worldwide, driving food transportation costs even higher. In the Arctic, Russia aggressively asserts its dominance and effectively shoulders out other nations with legitimate claims to seabed resources. No naval power exists to counter Russia’s claims. India, recognizing that its previous role as a balancer to China has lost relevance with the retrenchment of the Americans, agrees to supplement Chinese naval power in the Indian Ocean and Persian Gulf to protect the flow of oil to Southeast Asia. In exchange, China agrees to exercise increased influence on its client state Pakistan. The great typhoon of 2023 strikes Bangladesh, killing 23,000 people initially, and 200,000 more die in the subsequent weeks and months as the international community provides little humanitarian relief. Cholera and malaria are epidemic. Iran dominates the Persian Gulf and is a nuclear power. Its navy aggressively patrols the Gulf while the Revolutionary Guard Navy harasses shipping and oil infrastructure to force Gulf Cooperation Council (GCC) countries into Tehran’s orbit. Russia supplies Iran with a steady flow of military technology and nuclear industry expertise. Lacking a regional threat, the Iranians happily control the flow of oil from the Gulf and benefit economically from the “protection” provided to other GCC nations. In Egypt, the decade-long experiment in participatory democracy ends with the ascendance of the Muslim Brotherhood in a violent seizure of power. The United States is identified closely with the previous coalition government, and riots break out at the U.S. embassy. Americans in Egypt are left to their own devices because the U.S. has no forces in the Mediterranean capable of performing a noncombatant evacuation when the government closes major airports. Led by Iran, a coalition of Egypt, Syria, Jordan, and Iraq attacks Israel. Over 300,000 die in six months of fighting that includes a limited nuclear exchange between Iran and Israel. Israel is defeated, and the State of Palestine is declared in its place. Massive “refugee” camps are created to house the internally displaced Israelis, but a humanitarian nightmare ensues from the inability of conquering forces to support them. The NATO alliance is shattered. The security of European nations depends increasingly on the lack of external threats and the nuclear capability of France, Britain, and Germany, which overcame its reticence to military capability in light of America’s retrenchment. Europe depends for its energy security on Russia and Iran, which control the main supply lines and sources of oil and gas to Europe. Major European nations stand down their militaries and instead make limited contributions to a new EU military constabulary force. No European nation maintains the ability to conduct significant out-of-area operations, and Europe as a whole maintains little airlift capacity. Implications for America’s Economy. If the United States slashed its Navy and ended its mission as a guarantor of the free flow of transoceanic goods and trade, globalized world trade would decrease substantially. As early as 1890, noted U.S. naval officer and historian Alfred Thayer Mahan described the world’s oceans as a “great highway…a wide common,” underscoring the long-running importance of the seas to trade.[12] Geographically organized trading blocs develop as the maritime highways suffer from insecurity and rising fuel prices. Asia prospers thanks to internal trade and Middle Eastern oil, Europe muddles along on the largesse of Russia and Iran, and the Western Hemisphere declines to a “new normal” with the exception of energy-independent Brazil. For America, Venezuelan oil grows in importance as other supplies decline. Mexico runs out of oil—as predicted—when it fails to take advantage of Western oil technology and investment. Nigerian output, which for five years had been secured through a partnership of the U.S. Navy and Nigerian maritime forces, is decimated by the bloody civil war of 2021. Canadian exports, which a decade earlier had been strong as a result of the oil shale industry, decline as a result of environmental concerns in Canada and elsewhere about the “fracking” (hydraulic fracturing) process used to free oil from shale. State and non-state actors increase the hazards to seaborne shipping, which are compounded by the necessity of traversing key chokepoints that are easily targeted by those who wish to restrict trade. These chokepoints include the Strait of Hormuz, which Iran could quickly close to trade if it wishes. More than half of the world’s oil is transported by sea. “From 1970 to 2006, the amount of goods transported via the oceans of the world…increased from 2.6 billion tons to 7.4 billion tons, an increase of over 284%.”[13] In 2010, “$40 billion dollars [sic] worth of oil passes through the world’s geographic ‘chokepoints’ on a daily basis…not to mention $3.2 trillion…annually in commerce that moves underwater on transoceanic cables.”[14] These quantities of goods simply cannot be moved by any other means. Thus, a reduction of sea trade reduces overall international trade. U.S. consumers face a greatly diminished selection of goods because domestic production largely disappeared in the decades before the global depression. As countries increasingly focus on regional rather than global trade, costs rise and Americans are forced to accept a much lower standard of living. Some domestic manufacturing improves, but at significant cost. In addition, shippers avoid U.S. ports due to the onerous container inspection regime implemented after investigators discover that the second dirty bomb was smuggled into the U.S. in a shipping container on an innocuous Panamanian-flagged freighter. As a result, American consumers bear higher shipping costs. The market also constrains the variety of goods available to the U.S. consumer and increases their cost. A Congressional Budget Office (CBO) report makes this abundantly clear. A one-week shutdown of the Los Angeles and Long Beach ports would lead to production losses of $65 million to $150 million (in 2006 dollars) per day. A three-year closure would cost $45 billion to $70 billion per year ($125 million to $200 million per day). Perhaps even more shocking, the simulation estimated that employment would shrink by approximately 1 million jobs.[15] These estimates demonstrate the effects of closing only the Los Angeles and Long Beach ports. On a national scale, such a shutdown would be catastrophic. The Government Accountability Office notes that: [O]ver 95 percent of U.S. international trade is transported by water[;] thus, the safety and economic security of the United States depends in large part on the secure use of the world’s seaports and waterways. A successful attack on a major seaport could potentially result in a dramatic slowdown in the international supply chain with impacts in the billions of dollars.[16]

Answers To

### 2NC --- AT Interdependence

#### Interdependence doesn’t solve conflict – China is asymmetrically dependent on the US, and trade empirically doesn’t solve war

Col. Mike **Pietrucha** 11-4-20**15**; Col. Pietrucha, electronic warfare officer in the US Air Force “The Economics of War with China: This Will Hurt You More than It Hurts Me” <http://warontherocks.com/2015/11/the-economics-of-war-with-china-this-will-hurt-you-more-than-it-hurts-me/>

The ongoing competition between the People’s Republic of China and the United States in the Pacific is at a low simmer. Despite public friction over the U.S. Navy’s freedom of navigation operations, Chinese island construction in the South China Sea, and massive Chinese cyberespionage, relations between United States and China are not particularly adversarial. The United States has a vested interest in the status quo, a position that some Chinese writers view as an unfair and unrealistic constraint on Chinese ambition. Yet relations have not degenerated into the kind of brinkmanship typical of U.S.–Soviet relations in the 1980s, or even U.S.–Russian relations today. The robust trade relationship between the United States and China dwarfs the limited trade between the United States and the Soviet Union, leading many analysts to conclude that open conflict today is unrealistic because of a presumed equal economic impact on both sides. ***A cursory analysis reveals that the reality is entirely different: Sino–American economic ties are asymmetrically interdependent rather than mutually dependent***. This would strongly favor the United States in any conflict. Even within the Department of Defense, there are occasional traces of the opinion that the economic ties between the two nations would effectively prevent any open war. Under this assumption, the interdependence of the two nations acts as a barrier to escalation. This position is not new. British parliamentarian Richard Cobden wrote extensively about economic coercion and the obsolescence of British military might, starting some 30 years before the Civil War broke out in the United States. In 1909, Sir Norman Angell published the Great Illusion, arguing that European economic interdependence effectively rendered militarism obsolete. Five years later, the tinderbox that was early 20th-century Europe exploded into the most devastating war in over 250 years. Even when the Great War ground to a halt, it set the stage for a worse one only 21 years later. The willingness to slug it out with economic partners was not limited to Europe, either. In the Pacific, the United States was Japan’s largest trading partner in 1940 when Japan signed the Tripartite Pact with Germany and Italy. In 1940 the trade volume between the United States and Japan had been on a steady increase throughout the Great Depression despite the U.S. embargo on scrap metal. In fact, Japan set itself on a course for war with virtually all of its major trading partners, more or less simultaneously. Clearly, there are some credible doubts about the very idea that economic interdependence will prevent big wars. In many cases, warfare erupts between countries sharing borders over which trade routinely flows in peacetime. As world trade relationships have become increasingly globalized, the possibility exists that conflict could erupt with significant disruptive effects beyond the proximate combatants — similar to the effects observed from the Tanker War in the Persian Gulf. But ***we should not bank on the idea that trade interdependence will forestall conflict.*** The emergence of an effective global trade network may ensure that while markets may be disrupted, they can be rapidly reconstituted.

### 2NC --- AT Increases Escalation

#### They say counter-force increases hostility – no, China won’t be the one to go nuclear – it knows the US has escalation dominance

Fiona S. **Cunningham** **and** M. Taylor **Fravel** Fall 20**15**; Fiona S. Cunningham is a Ph.D. candidate in the Department of Political Science and member of the Secu- rity Studies Program at the Massachusetts Institute of Technology. M. Taylor Fravel is Associate Professor of Political Science and member of the Security Studies Program at the Massachusetts Institute of Tech- nology. “Assuring Assured Retaliation” International Security, Vol. 40, No. 2 (Fall 2015), pp. 7–50, doi:10.1162/ISEC\_a\_00215

A second reason for a relatively optimistic view of crisis stability is the Chinese view that China’s limited ambiguity over its no-first-use policy re- mains consistent with a clear firebreak between the use of conventional and nuclear weapons. China’s strategic community maintains that China would not use nuclear weapons first in a crisis or conflict. A recent textbook from AMS, for example, describes one of the Second Artillery’s main missions as “preventing (ezhi) an enemy from escalating a conventional war to a nuclear war.” 131 In the context of a Taiwan contingency, Maj. Gen. Yao Yunzhu explains that “it would be useless for China to deter U.S. conventional intervention by using China’s nuclear weapons**. It is the United States, not China, which has the nuclear capabilities to control and even dominate conflict escalation**.” 132 Some Chinese interlocutors also claimed that U.S. conventional superiority contributes to a clear conventional-nuclear firebreak, as the United States would always have conventional options to escalate a conflict and would therefore not need to resort to nuclear threats or use. 133 Most interlocutors ex- pressed confidence that the United States would have no reason to attack China’s nuclear arsenal with conventional weapons, but some interlocutors recognized that nuclear escalation control was a part of U.S. war planning, de- spite the United States’ conventional superiority. 134 If China views a conven- tional attack on its nuclear weapons or infrastructure as a first strike that would justify nuclear retaliation, its belief about a clear firebreak rests more on a belief that the United States will be deterred from initiating such an attack than it does on a principled constraint.

#### NFU ensures it won’t be ready or able to strike back – answers Manzo and Warden

\*NFU is no first use

Keir A. **Lieber** **and** Daryl G. **Press** 200**7**; Associate Professor in the Security Studies Program at Georgetown, and Associate Professor of Government at Dartmouth College Keir A. Lieber and Daryl G. Press, “US Nuclear Primacy and the Future of the Chinese Deterrent” China Security; Issue 5

Worries about crisis instability – and a nuclear war that neither side intends – can be set aside because of China’s commitment to the principal of NFU and its concomitant willingness to **leave its nuclear forces un-alerted and in a non-threatening posture during crises.** China’s official NFU pledge is sweeping, promising that “[a]t no time or under no circumstances would China first use nuclear weapons.” 16 This pledge is taken seriously by many knowledgeable observers of China, including Sun, Shen, and Li. Blair and Chen are adamant about China’s sincerity about NFU, noting that “China never wavered from its no- first-use (NFU) doctrine,” that Beijing’s “NFU commitment remains solid,” and that “**NFU will not be dislodged any time soon, if ever. It is a virtual canon of Chinese nuclear orthodoxy**.” 17

#### A counterforce strike on China would knock out their nuclear force with 700 casualties max

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The revolution in accuracy is producing an even more momentous change: it is becoming possible for the United States to conduct low- yield nuclear counterforce strikes that inflict relatively few casualties. A U.S. Department of Defense computer model, called the Hazard Prediction and Assessment Capability (HPAC), estimates the dispersion of deadly radioactive fallout in a given region after a nuclear detonation. The software uses the warhead's explosive power, the height of the burst, and data about local weather and demographics to estimate how much fallout would be generated, where it would blow, and how many people it would injure or kill. HPAC results can be chilling. In 2006, a team of nuclear weapons analysts from the Federation of American Scientists (FAS) and the Natural Resources Defense Council (NRDC) used HPAC to estimate the consequences of a U.S. nuclear attack using high-yield warheads against China's ICBM field. Even though China's silos are located in the countryside, the model predicted that the fallout would blow; over a large area, killing 3-4 million people. U.S. counterforce capabilities were useless, the study implied, because even a limited strike would kill an unconscionable number of civilians. But the United States can already conduct nuclear counterforce strikes at a tiny fraction of the human devastation that the FAS/NRDC study predicted, and small additional improvements to the U.S. force could dramatically reduce the potential collateral damage even further. The United States' nuclear weapons are now so accurate that it can conduct successful counterforce attacks using the smallest-yield warheads in the arsenal, rather than the huge warheads that the FAS/NRDC simulation modeled. And to further reduce the fallout, the weapons can be set to detonate as airbursts, which would allow most of the radiation to dissipate in the upper atmosphere. We ran multiple HPAC scenarios against the identical target set used in the FAS/NRDC study but modeled low-yield airbursts rather than high-yield groundbursts. The fatality estimates plunged from 3-4 million **to less than 700**--a figure comparable to the number of civilians reportedly killed since 2006 in Pakistan by U.S. drone strikes. One should be skeptical about the results of any model that depends on unpredictable factors, such as wind speed and direction. But in the scenarios we modeled, the area of lethal fallout was so small that very few civilians would have become ill or died, regardless of which way the wind blew.

#### 95 percent chance we’d destroy China’s arsenal – proves we have higher than 50% chance

Kier **Lieber** **and** Daryl **Press** November 200**9**; Associate Professor in the Security Studies Program at Georgetown, and Associate Professor of Government at Dartmouth College November 2009; “The Nukes We Need” Foreign Affairs November 2009 http://www18.georgetown.edu/data/people/kal25/publication-69267.pdf

The least bad option in the face of explicit nuclear threats or after a limited nuclear strike may be a counterforce attack to prevent further nuclear use. A counterforce strike could be conducted with either conventional or nuclear weapons, or a mix of the two. The attack could be limited to the enemy's nuclear delivery systems--for example, its bombers and missile silos--or a wider range of sites related to its nuclear program. Ideally, **a U.S. counterforce strike would completely destroy the enemy's nuclear forces**. But if an adversary had already launched a nuclear attack against the United States or its allies, a response that greatly reduced the adversary's nuclear force could save countless lives, and it could open the door to decisive military actions (such as conquest and regime change) to punish the enemy's leadership for using nuclear weapons. During the last decades of the Cold War, the nuclear arsenals of the United States and the Soviet Union were too big to be completely destroyed in a disarming strike, and, in any case, their nuclear delivery systems were not accurate enough to destroy large numbers of hardened targets. But the world has changed. Washington's potential adversaries field much smaller arsenals. Meanwhile, U.S. delivery systems have grown vastly more accurate. MODELING THE UNTHINKABLE To ILLUSTRATE the growth in U.S. counterforce capabilities, we applied a set of simple formulas that analysts have used for decades to estimate the effectiveness of counterforce attacks. **We modeled a U.S. strike on a small target set**: 20 intercontinental ballistic missiles (ICBMS) in hardened silos, **the approximate size of China's** current long-range, silo-based **missile force**. The analysis compared the capabilities of a 1985 Minuteman ICBM to those of a modern Trident II submarine-launched ballistic missile.[1] In 1985, a single U.S. ICBM warhead had less than a 60 percent chance of destroying a typical silo. Even if four or five additional warheads were used, the cumulative odds of destroying the silo would never exceed 90 percent because of the problem of "fratricide," whereby incoming warheads destroy each other. Beyond five warheads, adding more does no good. A probability of 90 percent might sound high, but it falls far short if the goal is to completely disarm an enemy: with a 90 percent chance of destroying each target, the odds of destroying all 20 are roughly 12 percent. In 1985, then, a U.S. ICBM attack had little chance of destroying even a small enemy nuclear arsenal. Today, a multiple-warhead attack on a single silo using a Trident II missile would have a roughly 99 percent chance of destroying it, and the probability that a barrage would destroy all 20 targets is **well above 95 percent**. Given the accuracy of the U.S. military's current delivery systems, the only question is target identification: silos that can be found can be destroyed. During the Cold War, the United States worked hard to pinpoint Soviet nuclear forces, with great success. Locating potential adversaries' small nuclear arsenals is undoubtedly a top priority for U.S. intelligence today.

### 2NC --- AT Second Strike

#### No way a second strike works - Tech gaps, expertise and organizational structure of the PLA means we’d take them out first

**Kazianis** February 20, 20**15** (Harry J [Senior Fellow for Defense Policy at the Center for the National Interest  and a Senior Fellow at the China Policy Institute]; Revealed: Why China Would Lose a War against America; nationalinterest.org/feature/revealed-why-china-would-lose-war-against-america-12288?page=3; kdf)

This article examines the challenges China would face against the U.S. in a conflict--but in a very broad, top-down, and practical sort of way. This time I will avoid the fun but sometimes easy to pick apart scenario-style type of analysis. While Beijing certainly has the tools to get the job done when it comes to a war with Washington, the challenges China would face in such a conflict would be immense— and many of them could be quite basic. The PRC would be going to war against the premier military power on the planet— some would argue the most lethal fighting machine of all time. In this essay we will review some of the important foundational reasons why many argue, quite convincingly, that the U.S. would very well defeat China in a war. Yes, Beijing keeps cranking out those whizz-bang high-tech weapons of war like sausages. China has those shiny, new carrier-killer missiles that everyone is always fretting about (including yours truly.) Its building aircraft carriers, 5th generation fighters, multiple types of cruise missiles, nuclear and ultra quiet diesel submarines, drones, mines and so on. It all looks really good— at least on paper. When it comes to a war with the U.S. how well would Beijing be able to use all that stuff? The real question seems pretty simple: yes, China is certainly developing all the military and technology goodies to field a potent force. However, how well can it operate all that equipment in the pressure filled situation of a war? Sure, Beijing is certainly developing a world-class military, but can its soldiers operate all that equipment competently? Just how well trained are they? You can have the best military in the world but if you don’t know how to use it, well, you get the idea. Opinions are mixed on this for sure. Ian Easton from Project 2049, in a piece for The Diplomat, reminds us of the possible capabilities, nature, and mission of the PLA— and its certainly not all about America: The state of “software” (military training and readiness) is truly astounding. At one military exercise in the summer of 2012, a strategic PLA unit, stressed out by the hard work of handling warheads in an underground bunker complex, actually had to take time out of a 15-day wartime simulation for movie nights and karaoke parties. In fact, by day nine of the exercise, a “cultural performance troupe” (common PLA euphemism for song-and-dance girls) had to be brought into the otherwise sealed facility to entertain the homesick soldiers… While recent years have witnessed a tremendous Chinese propaganda effort aimed at convincing the world that the PRC is a serious military player that is owed respect, outsiders often forget that **China does not even have a professional military.** The PLA, unlike the armed forces of the United States, Japan, South Korea, Taiwan and other regional heavyweights, is by definition not a professional fighting force. Rather, it is a “party army,” the armed wing of the Chinese Communist Party (CCP). Indeed, all career officers in the PLA are members of the CCP and all units at the company level and above have political officers assigned to enforce party control. Likewise, all important decisions in the PLA are made by Communist Party committees that are dominated by political officers, not by operators. So how much would the above impact the much-needed rapid reaction time essential to make quick decisions once the bombs begin to drop in a war with America? Is China up to the challenge? While the above exercise in 2012 could be just one isolated incident, the idea of the PLA being a “party army” is a very important reality. What does this all mean in a war with America? Your guess is as good as mine. How Good Can Beijing Fight “Jointly”? There is no better way to make a modern military even more deadly than to fight “jointly.” Sharing intelligence and waging war by coordinating your forces across multiple domains (think air, sea, space, cyber and land) is the best way to achieve hard fought military objectives and is the ultimate force multiplier. It is something America and many other great powers are putting a lot of time, energy and resources into. China is also working towards such a goal. And while sources vary on how well Beijing could wage a major joint operation against a determined foe— especially against the U.S.— many have their doubts. In a recent report by the RAND Corporation titled “China’s Incomplete Military Modernization” the authors have some serious doubts when it comes to Beijing’s joint warfighting capabilities: Many Chinese strategists identify the inability to conduct integrated joint operations at the desired level of competence as the central problem China faces as it aspires to project combat power beyond its land borders. Indeed, Chinese sources highlight several problems that contribute to the PLA’s shortcomings in the area of joint operations and suggest that there is still a large gap between China and developed countries’ militaries, especially the United States. In the same paragraph, the authors of the study also discuss issues with training, reinforcing my earlier point: PLA publications also highlight continuing shortfalls in training, despite years of effort to make training more realistic and more valuable in terms of addressing shortcomings and improving the PLA’s operational capabilities. In addition, the publications point to persistent challenges in combat support and combat service support functions and forces, as reflected by frequent discussions of shortcomings in logistics and maintenance capabilities that appear in PLA newspaper reports and journal articles. Can They Innovate? When it comes to military technology, keeping ahead of the curve is key. America seems to crank out new defense tech all the time. The question over the long-term for China will be how well it can keep up in the tech game. Specifically, can Beijing develop advanced military systems indigenously? This might be the biggest challenge for China when we look out over the long term (10-20 years in the future) in a conflict with America. We all know China has a great track record of, well, permanently “borrowing” the designs of many of the world’s best combat systems. However, one can only gain so much by playing copy cat. Even a copy needs to be reverse engineered— and sometimes that isn’t easy. A poor copy would do China no good on the battlefield. Over the next decade Beijing will need to develop ingeniously many of the world’s most sought after pieces of military hardware and other intricate systems that make them go— things like jet engines— that are not easy to produce with precision and that they currently struggle with. China will also need to get good at maintaining and improving world class equipment under the worst of conditions. While it might not be sexy, innovation and keeping ahead of the curve would pay dividends in a war against America when we look out over the long term. Only time will tell if Beijing is up to the challenge. The Last Time China Fought a Major War Was the Year I was Born: 1979 The best way to get good at anything is too actually go out and do it— and do it a lot. The challenge for China is that you can wargame all you want but unless you have experienced actual combat there will always be a learning curve. And the curve for China is steep: Beijing has not not fought a major war since its roughly one month skirmish with Vietnam in 1979. Now, while knowledge from a conflict thirty-five years ago might not translate into success against America in a war, having little to no combat experience could pose some challenges for China. Washington going into any conflict with Beijing would certainly have a decisive advantage when it comes to war fighting. While the conflicts America has fought over the last twenty-five years were not A2/AD battle royals, the last few decades has offered the U.S. military the capability to test out new systems and tactics, fix things that aren’t working when it comes to combat operations, and make important adjustments for future scenarios. For example, the U.S. did not need to send F-22s into Syria, however, the opportunity to learn on the battlefield and gain experience is of vital importance and likely the main reason for doing so. And it is one area that would have to be considered a major advantage in a battle against China.

### 2NC --- AT Nuclear Winter

#### Nuclear winter is a myth based on bad science – directly answers edwards

**Seitz, ‘06** (Russell, Harvard University Center for International Affairs visiting scholar, "The' Nuclear Winter ' Meltdown; Photoshopping the Apocalypse," adamant.typepad.com/seitz/2006/12/preherein\_honor.html, accessed 9-25-11)

The recent winter solstice witnessed a 'Carl Sagan Blog-a-thon' . So in celebration of Al Gore's pal, the late author of The Cold And The Dark there follows The Wall Street Journal's warmly cautionary Cold War reminder of how a campaign for the Nobel Peace prize on the Nuclear Freeze ticket devolved into a joke played at the expense of climate modeling's street cred on the eve of the global warming debate :The Melting of 'Nuclear Winter' All that remains of Sagan's Big Chill are curves such as this , Fig3tempprecip\_4\_2 but history is full of prophets of doom who fail to deliver, not all are without honor in their own land. The 1983 'Nuclear Winter " papers in Science were so politicized that even the eminently liberal President of The Council for a Liveable World called "The worst example ofthe misrepesentation of science to the public in my memory." Among the authors was Stanford President Donald Kennedy. Today he edits Science , the nation's major arbiter of climate science--and policy. Below, a case illustrating the mid-range of the ~.7 to ~1.6 degree C maximum cooling the 2006 studies suggest is superimposed in color on the Blackly Apocalyptic predictions published in Science Vol. 222, 1983 . They're worth comparing, because the range of soot concentrations in the new models overlaps with cases assumed to have dire climatic consequences in the widely publicized 1983 scenarios --Meltdownofttaps "Apocalyptic predictions require, to be taken seriously,higher standards of evidence than do assertions on other matters where the stakes are not as great." wrote Sagan in Foreign Affairs , Winter 1983 -84. But that "**evidence**" **was never forthcoming**. 'Nuclear Winter' never existed outside of a computer except as air-brushed animation commissioned by the a PR firm - Porter Novelli Inc. Yet Sagan predicted "the extinction of the human species " as temperatures plummeted 35 degrees C and the world froze in the aftermath of a nuclear holocaust. Last year, Sagan's cohort tried to reanimate the ghost in a machine anti-nuclear activists invoked in the depths of the Cold War, by re-running equally arbitrary scenarios on a modern interactive Global Circulation Model. But the Cold War is history in more ways than one. It is a credit to post-modern computer climate simulations that they **do not reproduce the apocalyptic results** of what Sagan oxymoronically termed "a sophisticated one dimensional model." The subzero 'baseline case' has melted down into a tepid 1.3 degrees of average cooling- grey skies do not a Ragnarok make. What remains is **just not the stuff that End of the World myths are made of**. It is hard to exaggerate how seriously " nuclear winter "was once taken by policy analysts who ought to have known better. Many were taken aback by the sheer force of Sagan's rhetoric Remarkably, Science's news coverage of the new results fails to graphically compare them with the old ones Editor Kennedy and other recent executives of the American Association for the Advancement of Science, once proudly co-authored and helped to publicize. You can't say they didn't try to reproduce this Cold War icon. Once again, soot from imaginaryPropaganda\_penguin\_1\_1 software materializes in midair by the megaton , flying higher than Mount Everest . This is not physics, but a crude exercise in ' garbage in, gospel out' parameter forcing designed to maximize and extend the cooling an aeosol can generate, by sparing it from realistic attrition by rainout in the lower atmosphere. Despite decades of progress in modeling atmospheric chemistry , there is none in this computer simulation, and ignoring photochemistry further extends its impact. Fortunately , the history of science is as hard to erase as it is easy to ignore. Their past mastery of semantic agression cannot spare the authors of "Nuclear Winter Lite " direct comparison of their new results and their old. Dark smoke clouds in the lower atmosphere don't last long enough to spread across the globe. Cloud droplets and rainfall remove them, rapidly washing them out of the sky in a matter of days to weeks- not long enough to sustain a global pall. Real world weather brings down particles much as soot is scrubbed out of power plant smoke by the water sprays in smoke stack scrubbers Robock acknowledges this- not even a single degree of cooling results when soot is released at lower elevations in he models . The workaround is to inject the imaginary aerosol at truly Himalayan elevations - pressure altitudes of 300 millibar and higher , where the computer model's vertical transport function modules pass it off to their even higher neighbors in the stratosphere , where it does not rain and particles linger.. The new studies like the old suffer from the disconnect between a desire to paint the sky black and the vicissitudes of natural history. As with many exercise in worst case models both at invoke rare phenomena as commonplace, claiming it prudent to assume the worst. But the real world is subject to Murphy's lesser known second law- if everything must go wrong, don't bet on it. In 2006 as in 1983 firestorms and forest fires that send smoke into the stratosphere rise to alien prominence in the modelers re-imagined world , but i the real one remains a very different place, where though every month sees forest fires burning areas the size of cities - 2,500 hectares or larger , stratospheric smoke injections arise but once in a blue moon. So how come these neo-nuclear winter models feature so much smoke so far aloft for so long? The answer is simple- **the modelers intervened**. Turning off vertical transport algorithms may make Al Gore happy- he has bet on reviving the credibility Sagan's ersatz apocalypse , but there is no denying that in some of these scenarios human desire, not physical forces accounts for the vertical hoisting of millions of tons of mass ten vertical kilometers into the sky.to the level at which the models take over , with results at once predictable --and arbitrary. This is not physics, it is computer gamesmanship carried over to a new generation of X-Box.

#### No US/China war

* Chinese military inferiority
* Economic interdependence
* American alliance system

Artyom 14, Professor @ Far Eastern Federal University (Russia), “Imagining World War III -- In 2034,” 8/4/2014, The World Post (partnership of the Huffington Post and Berggruen Institute, http://www.huffingtonpost.com/artyom-lukin/world-war-iii\_b\_5646641.html

There are three reasons war is unlikely anytime soon. First, despite the double-digit annual growth in its defense budgets, China's military still significantly lags behind the U.S.' It will take China 15 to 20 years to attain parity or near-parity with the U.S.-Japan allied forces in the East Asian littoral. Second, for all the talk of mutual interdependence, China depends on America much more than the other way round. China is still critically reliant on the U.S and its allies, the EU and Japan, as its principal export markets and sources of advanced technologies and know-how. Overall, China's dependence on international markets is very high, with the trade to GDP ratio standing at 53 percent. China imports many vital raw materials, such as oil and iron ore. As most of its commodity imports are shipped by the sea, China would be extremely vulnerable to a naval blockade, which is likely to be mounted by the U.S. in case of a major conflict. Both for economic and strategic reasons, the Chinese government pursues policies to reduce the country's reliance on foreign markets, trying to shift from an export-oriented model to domestic sources of growth. It is also making efforts to secure raw materials in the countries and regions contiguous to China, like Central Asia, Russia or Burma, so as to reduce dependence on sea-born shipments. However, at least for the next 15 to 20 years China's dependency on the West-dominated global economic system is going to stay very significant. Third, China would have to confront not the U.S. alone but also America's Asian allies, including Japan, Australia and perhaps India. Thus China needs at least one major power ally and some lesser allies. Whether China dares to pose a serious challenge to the U.S. will, to a large extent, hinge upon Beijing and Moscow forming a Eurasian geopolitical bloc. This is already happening now, but it is going to take some more time. The bottom line: over the next 15 to 20 years a major war in Asia is highly unlikely because Beijing will be playing a cautious game. Even if a military clash does occur, it will be short, with China being quickly routed by the preponderant American force. However, around 2030 the balance is bound to undergo considerable changes, if China is successful in: 1) closing military gap with the U.S.; 2) making its economy less reliant on the Western markets and overseas raw resources; and 3) forming its own alliance structure.’

#### Multiple checks on US China conflict

**Leon, 17** – David Pak Yue, Assistant Professor Department of Political Science & History, Keuka College (“Economic Interdependence and International Conflict: Situating China's Economic and Military Rise,” Asian Politics & Policy, vol 9, is 1, January 2017, Wiley //Red)

China has, in the past 30 years, experienced economic growth and military modernization to such an extent as to position itself as a power capable of shaping the Asian regional order and, potentially, the rules and institutions governing the international system.1 In the existing literature, various policy analysts and international relations scholars have argued that, historically, systemic risks of conflicts tend to increase at critical junctures of power transitions or major power shifts when the power gap narrows between a hegemon and a rising challenger, especially a revisionist one committed to overturning the established set of institutional arrangements (see Copeland, 2000; Gilpin, 1983; Kugler & Lemke, 1996; Organski, 1958; see also Chan, 2008; Harris, 2014). An increasingly powerful China in the context of the relative decline of the United States (Layne, 2012; Zakaria, 2008; although see Beckley, 2011) has brought these debates into sharper relief because whether or not China can rise peacefully and whether or not it will challenge the United States in its dual role as the premier global power and traditional underwriter of global governance institutions will have major implications for both theory and policy as analytical apparatuses are reexamined and reworked, and policy prescriptions developed and dispensed.

This article first suggests that neither theoretical nor policy questions pertaining to China's rise can be properly addressed without examining the nature and meaning of any power shifts that are said to be in process, or the balance of economic and military forces within the intersecting global and East Asian regional systems. Clarifying these issues in turn requires an analysis of such factors as the trajectories, reversibility, and distributional consequences of differential growth; the possibilities and constraints of China's current and expected military capabilities, especially in relation to power projection and strategic means of coercion (i.e., naval and air forces capable of long-range operations, as well as nuclear forces and the capabilities and ranges of delivery vehicles); economic interdependence; and China's dispositions toward rule-based international institutional complexes.

This article argues that while China has seen tremendous economic growth and substantial military modernization, sustaining its economic prosperity depends to a large extent on global trade, internal and external stability, and the ability to access natural resources. A deep level of international institutional engagement that it has exhibited while rising in wealth and power is quite dissimilar to aggressive rising challengers in the past (e.g., Imperial Japan and Nazi Germany) where autarky or economic self-sufficiency and aloofness from rule-based institutions tended to mark their behavior. Inasmuch as engagement and enmeshment continue to be prioritized in Chinese foreign policy, China will likely have strong disincentives to initiate conflicts that may disrupt trade and resource flows and essentially slow its own rise. For the foreseeable future, its military also does not have the kind of power projection capability and its foundational sources—or what can be called the command of the commons (Pose, 2003)—that would allow it to mount a serious challenge to U.S. military primacy in the Western Pacific, much less to initiate a revisionist war to reorder the core systemic arrangements; on the contrary, it has seldom been more involved and engaged in such arrangements in modern times. This relatively benign conclusion, however, is conditional on China's continued access to the resources necessary for further development and growth by means of trade or acquisition, which also serves as a linchpin of domestic regime stability. This can be attributed to Deng Xiaoping's admonition for China to “hide its capabilities and bide its time” in international politics, a concept traceable to Sun Tzu's classic notion that high strategic virtue lies in winning without a fight (see Sun, 2009; see also Friedberg, 2011; Kissinger, 2011). It is still too early to tell if tensions in China's geographical periphery and China's more recent assertiveness in international affairs indicate a fundamental reorientation or an adjustment in policy, but in any case, such tensions and the possibility of escalation should not be taken lightly.

In short, China has been rising within a rule-based system characterized by the institutionalization of world trade and politics (Baviera, 2016; Ikenberry, 2011), conceived initially as U.S.-led institutional design, and more broadly intensified in the closing decades of the 20th century and the beginning of the 21st century. If this institutional architecture proves not to be robust and resilient enough to ensure reasonably unhindered access to the lifeblood of growth, dangers may still loom for a concerted drive for autarky that in earlier times had emanated from great power anxieties and heralded international conflicts. The very existence and pervasiveness of contemporary global institutions, however, do present China with the possibility to rewrite or create its own set of global institutions, something that totalitarian rising powers in the first half of the 20th century did not seriously attempt to do.

#### No china war

Bilahari **Kausikan 16**, Ambassador-at-large and policy adviser in the Ministry of Foreign Affairs, and the Institute of Policy Studies' 2015/16 S R Nathan Fellow for the Study of Singapore, “War is unlikely but distrust runs deep,” Feb 27 2016, http://www.straitstimes.com/opinion/war-is-unlikely-but-distrust-runs-deep

This is not a question that should lend itself to facile answers. **US-China relations** defy simple characterisation. But it **is certainly not "a Clash of Civilisations".**¶ **China could not have succeeded without the US.** China's success is, in a very fundamental way, also an American success, albeit a not entirely comfortable one for America. This perhaps adds in no small part to the complexity of the strategic adjustments that are under way between the US and China. But whether it admits it or not, the US too has begun to adapt. There can be no "Clash of Civilisations" because we are now all hybrids.¶ The inevitably irregular rhythms of economic growth ought to make us cautious about accepting simplistic characterisations of US-China relations as some variant of a contrast between a rising China and a declining US. This posits a false dichotomy. China is certainly rising but the US is not in decline. All who have underestimated American creativity and resilience have come to regret it. The changes in the distribution of power are relative, not absolute. The US is still pre-eminent in most indices of power and is likely to remain so for the foreseeable future.¶ This is most obvious in the military realm. **Before too long, China will reach a more symmetrical military equation with the US in East Asia**. This will have very important implications for the maritime disputes in the South China Sea. **While military planners cannot ignore any contingency, war is not a very probable scenario.** **Neither the US nor China is looking for trouble or spoiling for a fight.** **The essential priorities of both are internal, not external. The most vital of all Chinese interests is the preservation of** Chinese Communist Party (**CCP) rule.** **Chinese leaders sometimes talk tough. But they are not reckless**.¶ As the sole global power, the US cannot retreat into complete isolationism. Like it or not, the world will intrude and in East Asia specifically, there has been a fundamental consistency in US policy over the last 40 years or more that I expect will be maintained.¶ But the political mood that has sustained contenders Donald Trump and Bernie Sanders in their unlikely presidential campaigns is disillusionment with globalisation and working- and middle-class insecurity about their future in an increasingly unfamiliar and uncertain world. Whoever next occupies the White House will talk and even act tougher. But **no American president can ignore the national mood, which is not for more wars of choice**.¶ If **war between the US and China is highly improbable**, is there or will there be a "new Cold War" between the two? **There will almost certainly be tense episodes. But I do not think this is** an **appropriate** metaphor **to understand the US-China dynamic**.¶ So where does all this leave us? I do not think it makes the strategic adjustments any easier. But it does imply that **the parameters within which the US and China** must **seek** a new **accommodation are narrower than** what **we** might **have been led to expect by** the media or the more **sensationalist** sort of academic **analysis**.

#### No US/China war

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There are three reasons war is unlikely anytime soon. First, despite the double-digit annual growth in its defense budgets, China's military still significantly lags behind the U.S.' It will take China 15 to 20 years to attain parity or near-parity with the U.S.-Japan allied forces in the East Asian littoral. Second, for all the talk of mutual interdependence, China depends on America much more than the other way round. China is still critically reliant on the U.S and its allies, the EU and Japan, as its principal export markets and sources of advanced technologies and know-how. Overall, China's dependence on international markets is very high, with the trade to GDP ratio standing at 53 percent. China imports many vital raw materials, such as oil and iron ore. As most of its commodity imports are shipped by the sea, China would be extremely vulnerable to a naval blockade, which is likely to be mounted by the U.S. in case of a major conflict. Both for economic and strategic reasons, the Chinese government pursues policies to reduce the country's reliance on foreign markets, trying to shift from an export-oriented model to domestic sources of growth. It is also making efforts to secure raw materials in the countries and regions contiguous to China, like Central Asia, Russia or Burma, so as to reduce dependence on sea-born shipments. However, at least for the next 15 to 20 years China's dependency on the West-dominated global economic system is going to stay very significant. Third, China would have to confront not the U.S. alone but also America's Asian allies, including Japan, Australia and perhaps India. Thus China needs at least one major power ally and some lesser allies. Whether China dares to pose a serious challenge to the U.S. will, to a large extent, hinge upon Beijing and Moscow forming a Eurasian geopolitical bloc. This is already happening now, but it is going to take some more time. The bottom line: over the next 15 to 20 years a major war in Asia is highly unlikely because Beijing will be playing a cautious game. Even if a military clash does occur, it will be short, with China being quickly routed by the preponderant American force. However, around 2030 the balance is bound to undergo considerable changes, if China is successful in: 1) closing military gap with the U.S.; 2) making its economy less reliant on the Western markets and overseas raw resources; and 3) forming its own alliance structure.

### No Nukes

#### China won’t escalate any conflict to nuclear level—NFU, no interests

Cunningham and Fravel ‘15 Fiona S. Cunningham, Member of the Security Studies Program at MIT, and M. Taylor Fravel, Associate Professor of Political Science and member of the Security Studies Program at MIT, “Assuring Assured Retaliation,” Fall 2015 <http://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00215> wesle

Our analysis of Chinese views on the strategic posture of the United States yields two important findings. First, China will not abandon its strategy of assured retaliation in response to an increasingly clear U.S. commitment to strategic primacy.7 China currently believes that it is both possible and desirable to maintain assured retaliation, despite U.S. pursuit of the capabilities necessary to achieve strategic primacy. China has retained its no-first-use policy while modernizing and modestly expanding its nuclear forces. Instead, China will alter how it implements its strategy of assured retaliation, increasing the capabilities for the “assuredness” of retaliation by increasing the number of missiles and warheads that can strike the continental United States. China is also allowing limited ambiguity over the application of its no-first-use policy, especially if the United States were to use conventional weapons to attack Chinese nuclear weapons or their supporting infrastructure. Second, Chinese strategists are relatively and perhaps unexpectedly optimistic about U.S.-China crisis stability, now and in the future. Recent international relations scholarship has warned that the combination of mutual possession of nuclear weapons and conventional military asymmetry creates both risks of unintentional nuclear escalation and incentives for China and the United States to manipulate the risk of nuclear escalation for bargaining purposes during a crisis. By contrast, China’s strategists believe that the interests at stake would be too low in any U.S.-China scenario for either side to create risks of nuclear escalation. Moreover, China’s no-first-use policy means that only the United States would escalate to the nuclear level, which is unlikely, given its conventional military superiority over China. In addition, China is allowing limited ambiguity over its no-first-use policy to deter the United States from attacking China’s nuclear forces with conventional weapons. With some exceptions, Chinese strategists are not worried that this ambiguity could be mistaken for Chinese preparations to actually use nuclear weapons first. Chinese strategists also dismiss U.S. concerns that implementing the AirSea Battle Concept could result in escalation, because they dismiss the possibility that China’s nuclear capabilities could be unintentionally compromised by U.S. conventional attacks. Doctrinal materials suggest that the People’s Liberation Army (PLA) has been planning to protect its nuclear forces and its command and control facilities from conventional attacks for at least a decade, which suggests that if the AirSea Battle Concept threatens China’s nuclear weapons, it is not a novel threat.

## A2 Russia War

### Deesecalation Now

#### Russia de-escalating now – 4 reasons – their threat construction blinds us from opportunities to build interlinkages that prevent war

Michael E. O'Hanlon and Sean Zeigler, 19 7-13-2019, Senior Fellow - Foreign Policy and Director of Research - Foreign Policy; a writer for Brookings; No, we aren’t on the brink of a new Cold War with Russia and China; Brookings; https://www.brookings.edu/blog/order-from-chaos/2019/07/13/no-we-arent-on-the-brink-of-a-new-cold-war-with-russia-and-china/ //Frese – highlighting – sean!

Increasingly in U.S. national security circles, it has become common to hear talk of a new Cold War with great-power rivals. But this way of thinking is imprecise at best, dangerous at worst. A distinguished group of American experts has just warned against such thinking in regard to China, lest it create a self-fulfilling prophecy. However unbecoming Vladimir Putin’s rule may be in Moscow, we need a similar corrective for how we think about Russia. The Trump administration’s 2018 National Defense Strategy, like the second-term Obama administration’s “Third Offset” concept, usefully reemphasizes deterrence of great-power conflict. There can be no doubt that Russia and China have both behaved in a much more assertive and threatening manner in recent years. But the United States has a tendency to overdo such policies. In the case of Russia, while NATO’s modernization efforts, and its modest military reinforcements in places like the Baltic states and Poland are welcome, we must avoid a pervading mentality that anticipates a struggle with the Kremlin at every turn. COLD WAR RHETORIC ABOUT RUSSIA IS MISCONCEIVED The dangers and fallacies of thinking in Cold-War, zero-sum, and military-first policies towards Russia are several-fold. First, today’s Russia, while both vindictive and ambitious, has nothing like the global ambitions of the Soviet Union. While it expresses a sense of betrayal by the West, it evinces no grandiose concept for worldwide conquest. As authors such as Timothy Snyder and Robert Kagan rightly argue, there can be a sort of authoritarian contagion that leaders like Putin could spread. But this is hardly akin to the Kremlin’s Marxist-Leninist ambitions for conquest during the Cold War. Second, a Cold-War-like attitude ignores how much we are still working with Russia on key global security concerns. Russia’s role is especially important given its veto powers at the United Nations Security Council, crucial for policies such as imposing sanctions on threatening nations. If there is someday to be a new deal with Iran to supersede the 2015 Joint Comprehensive Plan of Action, or if there is to be a negotiated denuclearization plan of some sort with North Korea, Russia’s support will be crucial. Despite troubled relations in recent years, Moscow generally has supported American policy at the United Nations in regard to these countries. Even in places where Russian policy is distasteful, or even reprehensible, such as in Syria, it will be far easier to solve problems if we can de-conflict our approaches with Moscow — and in fact, certain types of military deconfliction have been taking place for some time there, making possible the defeat of the ISIS caliphate. Third, for all the debate about NATO’s lack of adequate seriousness when it comes to defense burden-sharing, the alliance remains impressive. Although only 7 countries meet the official goal of spending at least 2 percent of GDP on their armed forces, NATO collectively accounts for more than half of all world military spending. Most members have significantly increased their defense budgets since the Crimea crisis of 2014. NATO has also deployed enhanced forward presence battalions to the Baltic states and Poland. They do not constitute a robust defensive perimeter, but they at least represent a stronger tripwire than before. NATO would do well to make its reinforcement capabilities for this region more robust, but it is hard to see Mr. Putin really believing he could get away with an all-out invasion, even today. So far, he has cautiously avoided any military excursions into NATO countries. Fourth, European nations do not get enough credit for the sustaining their sanctions on Russia as a result of its aggressions against Ukraine. Over the last half decade, largely as a result, the Russian economy has essentially gone flat. Gross domestic product and foreign direct investment in Russia have both declined since its Crimean invasion. Not only has this outcome delivered a useful punitive blow against Putin and many of his cronies, it has quite possibly helped dissuade any further Russian aggression, be it against Ukraine or Georgia or even a Baltic state, adding another dimension of deterrence to what NATO is doing militarily. A greater integration of economic and military measures of deterrence should be pursued in the United States and NATO, as one of us has recently argued in a new book, The Senkaku Paradox. More credible policies are needed in particular for limited and grey-area conflict zones. Such scenarios do indeed remain worrisome, as Russia continues to engage in disinformation campaigning and election meddling — but these efforts should not be confused with the existential risks of the Cold War. WE CAN DEFUSE TENSIONS WITH RUSSIA And finally, thinking in Cold-War terms can blind us to the need to debate some of our own policies, where there may be opportunities to defuse U.S.-Russia tensions with creative ideas. A case in point is the future of NATO expansion, especially into former Soviet republics. Since 2008, NATO has officially promised to bring Ukraine and Georgia into the alliance at some point in the future. President Obama and President Trump have both let this Bush administration initiative stand. That would be a mistake. Geographically and strategically, such a move would be a bridge too far for an alliance that was designed to stabilize the North Atlantic region. Moreover, while nothing can excuse Russia’s aggressions, the net effect of that 2008 NATO announcement, which contained no timetable for eventual membership for Georgia and Ukraine and no interim security guarantee as they waited, was to paint a giant bullseye on each of their metaphorical backs. We need to work out a new concept for security in eastern Europe that would enhance their security short of alliance membership, rather than degrade it as a half-serious promise of future alliance membership has done to date. All other national options that any sovereign state should enjoy, such as the right to join the EU if invited, must be protected in such an arrangement, but NATO membership would be counterproductive. Indeed, under present conditions, it is really not even possible. The world is unsettled, and risky, yes. But those who liken the contemporary environment to the Cold War may have forgotten how profoundly dangerous most of the latter period really was.

### No Russia Attack

#### Russia is not an expansionist power and does not have imperial ambitions. An aging population, weak economy, and strategic interests prevent adventurism.

Carpenter 15 – Ted Galen Carpenter, Ph.D. in U.S. diplomatic history from the University of Texas, senior fellow for defense and foreign policy studies at the Cato Institute, contributing editor to the National Interest and serves on the editorial boards of Mediterranean Quarterly and the Journal of Strategic Studies, 2015 (“Dealing with a Prickly Russia,” *CATO*, September 16th, http://www.cato.org/publications/commentary/dealing-prickly-russia)

Even more important, Western opinion elites need to stop viewing Putin’s Russia as a reincarnation of Nazi Germany or the Soviet Union. In marked contrast to those malignantly expansionist powers, today’s Russia seems to have far more limited, largely defensive, ambitions - focused on maintaining a sphere of influence along Russia’s borders. That is a far cry from the continental ambitions of Nazi Germany or the global ambitions of the Soviet Union. Moreover, Russia lacks many of the characteristics of an aggressive power on the rise. An aging, shrinking population and an unbalanced economy heavily dependent on high prices for its commodity exports does not provide the solid foundation for an expansionist power. Creating a more cooperative relationship requires a crucial change in Western (especially US) policy. American officials regard the existence of spheres of influence as illegitimate in the 21st century international system. Both former Secretary of State Condoleezza Rice and current Secretary of State John Kerry have explicitly condemned the concept. That hostility is unrealistic and myopic. Great powers understandably are more concerned about developments, particularly hostile developments, in their immediate neighborhoods. And contrary to recent rhetoric, the United States is no exception. A better relationship with Russia requires Western recognition that Moscow is going to insist that Ukraine never be part of the EU or NATO. It also means realizing that any Russian government is likely to regard a NATO military buildup in Eastern Europe as a profoundly hostile act. Finally, it means acknowledging the reality that persisting in the current regime of economic sanctions will annoy (and may even damage) Russia, but it will not cause the Kremlin to disgorge Crimea. More fundamentally, it means that the West needs to view Russia as a prickly, but conventional, great power, not a malignantly expansionist state. Moscow can help solve a number of problems in the international system, including North Korea’s worrisome nuclear program, just as it has already helped develop a peaceful solution to the Iran nuclear issue. Russia is also an important ally in the fight against radical Islamic terrorism. There are some substantive policy differences between Moscow and the Western allies on how to deal with Iran and Syria. Although supportive of the P5+1 negotiations with Tehran that ultimately produced an agreement to constrain Iran’s nuclear program, the Kremlin is also pursuing a more conciliatory bilateral policy toward Iran. The West certainly is not happy with Moscow’s decision to sell S300 air defense missiles to the clerical regime. Nevertheless, Russia and the Western powers have important interests in common regarding Iran, and they need to maximize cooperation. The policy differences with respect to Syria are more pronounced, but there are still underlying mutual interests. Russia believes that the West’s demand that Assad relinquish power is incredibly myopic. The Kremlin has now escalated its commitment to help the beleaguered Syrian autocrat, providing military hardware and even showing signs of deploying Russian military personnel. Russian officials warn their Western colleagues that ousting Assad will create a power vacuum greatly benefiting ISIS. The initial US and European response to Russia’s escalation has been extremely negative, but Western leaders need to be more flexible. Moscow’s action makes an ISIS triumph less likely, and that is very much in the West’s own best interests. On the Syrian issue, Russia can provide important indirect security benefits to the Western powers and seems willing to do so.

#### No risk of Russia war---neither side will escalate

Andrei Tsygankov 16, Professor at the Departments of Political Science and International Relations at San Francisco State University, PhD from USC, “5 reasons why the threat of a global war involving Russia is overstated,” Feb 19 2016, http://www.russia-direct.org/opinion/5-reasons-why-threat-great-power-war-involving-russia-overstated

The contemporary discussion of security interactions among major powers is depressing to participants and observers alike. Experts and politicians are warning us of an increasingly high likelihood of a military conflict – possibly a nuclear one – between Russia, on the one hand, and the U.S. or NATO, on the other.¶ In the West, many argue the dangers associated with a “resurgent” Russia and vow to defend themselves from Russian President Vladimir Putin’s “aggressive” actions in Eastern Europe and the Middle East. Last month, U.S. Defense Secretary Ash Carter accused Russia of threatening the world order and starkly warned: “Make no mistake, the United States will defend our interests, our allies, the principled international order, and the positive future it affords us all.”¶ The tensions have been growing and have become especially high since the 2014 Ukraine crisis. Russian military flights over the Baltic and Black Sea in response to NATO’s active buildup on Russia’s European borders has done little to calm these fears. The Turkish decision to shoot down a Russian warplane by claiming violation of its airspace in November 2015 revived the discussion of Moscow’s possible military conflict with Istanbul and NATO, of which Turkey is a member. More recently, the hype has been over the Kremlin’s alleged preparations to invade the Baltic States and the West’s need to respond.¶ In Russia, these threats and discussions are taken seriously, and the responsibility for these security tensions has been squarely placed on the Western powers. The frequently repeated charges are that the West and NATO have encircled Russia with military bases and refused to recognize Moscow’s global interests. Russian media have actively discussed the U.S. National Security Archive’s Cold War documents on a nuclear attack against Russia and China declassified on Dec. 22, 2015.¶ Last week, while attending the Munich Security Conference, Prime Minister Dmitry Medvedev compared the contemporary security environment with the one that led to the Cuban Missile Crisis and reminded the audience of U.S. President John F. Kennedy’s words that “foreign policy can kill us."¶ In the meantime, contradicting Medvedev, Russian experts often bemoan the fact that the Cold War was far more predictable and less dangerous than today’s multipolar world. What many have initially viewed as a generally positive transition from the U.S. “diktat” is now presented as leading toward a great power war.¶ This increasingly apocalyptic mood on both sides reflects a growing international instability and breakdown of important communication channels between Russia and the West. Since the beginning of Ukraine crisis and up until the G20 meeting in Antalya in December 2015, the two sides have barely interacted. Appalled by Russia’s annexation of Crimea and support for Ukrainian separatists, Western leaders pursued policies of sanctions and isolation, whereas the indignant Kremlin has sought to demonstrate its indifference toward such policies.¶ Only since Antalya have Putin and U.S. President Barack Obama resumed their attempts to regularly discuss issues of importance. Western and Russia military, too, severed their contacts although the two sides have recently begun to coordinate their actions in the Syrian airspace. The aforementioned alarmist views and arguments are misplaced because they underestimate the dangers of the Cold War and overestimate those of today’s world.¶ Despite some attempts to present the Cold War as generally stable, predictable, and peaceful, this is not the time to feel nostalgic about it. Multiple crises from Berlin to Cuba and Afghanistan extended across much of the Cold War era. State propaganda on both sides was reinforced by an intense ideological confrontation accompanied by drills and necessary preparations for a nuclear war.¶ The Oscar-nominated film “Bridge of Spies” directed by Steven Spielberg reproduces some of that hysterical atmosphere in the United States where the public was mobilized for any actions in support of the government. In the Soviet Union it was no different. For the world outside the West and the U.S.S.R., this was not a peaceful, but rather an increasingly chaotic and violent time – the conclusion well documented by scholars of the Third World.¶ Why today's world is less dangerous than the Cold War¶ Today’s world, while threatening and uncertain, is hardly more dangerous than the Cold War, for the following reasons.¶ First, whatever the rhetoric, major powers are not inclined towards risky behavior when their core interests are at stake. This concerns not only the nuclear superpowers, but also countries such as Turkey. The prospect of confronting Russia's overwhelmingly superior military should give pause even to someone as hot-tempered as Turkish President Tayyip Erdogan. Even if Erdogan wanted to pit Russia against NATO, it wouldn’t work.¶ So far, NATO has been careful to not be drawn into highly provocative actions, whether it is by responding to Russia seizing the Pristina International Airport in June 1999, getting involved on Georgia’s side during the military conflict in August 2008 or by providing lethal military assistance and support for Ukraine. Unless Russia is the clear and proven aggressor, NATO is unlikely to support Turkey and begin World War III.¶ Second, Russia remains a defensive power aware of its responsibility for maintaining international stability. Moscow wants to work with major powers, not against them. Its insistence on Western recognition of Russia’s interests must not be construed as a drive to destroy the foundations of the international order, such as sovereignty, multilateralism, and arms control.¶ Third, the United States has important interests to prevent regional conflicts from escalating or becoming trans-regional. Although its relative military capabilities are not where they were ten years ago, the U.S. military and diplomatic resources are sufficient to restrain key regional players in any part of the world. Given the power rivalry across several regions, proxy wars are possible and indeed are happening, but they are unlikely to escalate.¶ Fourth, unlike the Cold War era, the contemporary world has no rigid alliance structure. The so-called Russia-China-Iran axis is hardly more than a figment of the imagination by American neoconservatives and some Russia conspiracy-minded thinkers. The world remains a space in which international coalitions overlap and are mostly formed on an ad hoc basis.¶ Fifth, with the exception of the Islamic State of Iraq and the Greater Syria (ISIS), there is no fundamental conflict of values and ideologies. Despite the efforts to present as incompatible the so-called “traditional” and “Western” values by Russia or “democracy” to “autocracy” by the United States and Europe, the world majority does not think that this cultural divide is worth fighting for.¶ Despite the dangers of the world we live in, it contains a number of important, even underappreciated, checks on great powers’ militarism. The threat talk coming from politicians is often deceiving. Such talk may be a way to pressure the opponent into various political and military concessions rather than to signal real intentions. When such pressures do not bring expected results, the rhetoric of war and isolation subsides.¶ Then a dialogue begins. Perhaps, the increasing frequency of exchanges between Obama and Putin since December 2015 - including their recent phone conversation following the Munich conference - suggest a growing recognition that the record of pressuring Russia has been mixed at best.

#### No motive or capability

Betts 13 Richard is the Arnold A. Saltzman Professor of War and Peace Studies @ Columbia. “The Lost Logic of Deterrence,” Foreign Affairs, March/April, Vol. 92, Issue 2, Online

These continuities with the Cold War would make sense only between intense adversaries. Washington and Moscow remain in an adversarial relationship, but not an intense one. If the Cold War is really over, and the West really won, then continuing implicit deterrence does less to protect against a negligible threat from Russia than to feed suspicions that aggravate political friction. In contrast to during the Cold War, it is now hard to make the case that Russia is more a threat to NATO than the reverse. First, the East-West balance of military capabilities, which at the height of the Cold War was favorable to the Warsaw Pact or at best even, has not only shifted to NATO's advantage; it has become utterly lopsided. Russia is now a lonely fraction of what the old Warsaw Pact was. It not only lost its old eastern European allies; those allies are now arrayed on the other side, as members of NATO. By every significant measure of power -- military spending, men under arms, population, economic strength, control of territory -- NATO enjoys massive advantages over Russia. The only capability that keeps Russia militarily potent is its nuclear arsenal. There is no plausible way, however, that Moscow's nuclear weapons could be used for aggression, except as a backstop for a conventional offensive -- for which NATO's capabilities are now far greater.¶ Russia's intentions constitute no more of a threat than its capabilities. Although Moscow's ruling elites push distasteful policies, there is no plausible way they could think a military attack on the West would serve their interests. During the twentieth century, there were intense territorial conflicts between the two sides and a titanic struggle between them over whose ideology would dominate the world. Vladimir Putin's Russia is authoritarian, but unlike the Soviet Union, it is not the vanguard of a globe-spanning revolutionary ideal.

#### Expert consensus puts the risk at only 2 percent

Vikas Shukla 15, business writer for ValueWalk, citing a survey by Jay Ulfelder, PhD in Poli Sci from Stanford, former Research Director of the Political Instability Task Force, “Russia vs. U.S. Nuclear War Is Highly Unlikely,” July 8 2015, <http://www.valuewalk.com/2015/07/russia-vs-u-s-nuclear-war-unlikely/>

Russia and the U.S. are aggressively upgrading their nuclear arsenal as tensions between the two countries continue to mount. Washington is sending hundreds of howitzers, tanks and other lethal weapons to Eastern Europe amid Russia’s ‘nuclear rhetoric.” It has fueled worries that even an accidental escalation could lead to a nuclear war.¶ Only 2% probability of a nuclear war between Russia and the U.S. ¶ A Gallup poll conducted last year found that 50% Americans believe the country was headed back to Cold War. While the mainstream public opinion is highly pessimistic, there is very little chance of a nuclear war between the two powers. Russian political analyst Fyodor Lukyanov recently told Vox that “a war is not something that’s impossible anymore.” Even if the two countries engage in a conflict, could it lead to a nuclear war?¶ Political analyst Jay Ulfelder, who runs the Dart-Throwing Chimp blog, conducted a survey. He asked people on the online political science expert communities two questions: What are the odds of a Russia vs U.S. war before 2020; and if such a conflict occurred, whether it would turn into a nuclear war. He collected responses and ran them through statistical analysis.¶ Ulfelder found that only 11% people said there was a probability of war between the two countries. Conditional on war, there was 18% probability that one or both sides will resort to nuclear weapons. Ulfelder translated these figures into a single number: 2% probability of a nuclear war between the U.S. and Russia.¶ Difference between mainstream public and expert opinion¶ The results of his survey are in line with that of a survey by Teaching, Research, and International Policy (TRIP). TRIP asked scholars, “How likely is a war between the United States and Russia over the next decade? Please use the 0–10 scale with 10 indicating that war will definitely occur.” They received responses from 2,040 scholars. On a scale of 0-10, the average perceived risk of war with Russia was 2.55. Their opinions were dramatically different from the mainstream public opinion.

### No US Attack

#### U.S. won’t go to war with Russia

Peck 14 [[Michael Peck](http://www.forbes.com/sites/michaelpeck/) (Contributor on defense and national security for Forbes); “7 Reasons Why America Will Never Go To War Over Ukraine”; 3/05/2014; http://www.forbes.com/sites/michaelpeck/2014/03/05/7-reasons-why-america-will-never-go-to-war-over-ukraine/]

America is the mightiest military power in the world. And that fact means absolutely nothing for the Ukraine crisis. **Regardless of whether Russia continues to occupy** the **Crimea** region of Ukraine, **or** decides to occupy **all of Ukraine,** the U.S. is not going to get into a shooting war with Russia**. This has nothing to do with whether Obama is strong or weak**. Jimmy Carter or Ronald Reagan would face the same constraints. The U.S. may threaten to impose economic sanctions, but here is why America will never smack Russia with a big stick: **Russia is a nuclear superpower**. Russia has an estimated 4,500 active nuclear warheads, according to the [Federation of American Scientists](http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html). Unlike North Korea or perhaps Iran, whose nuclear arsenals couldn’t inflict substantial damage, Russia could totally devastate the U.S. as well as the rest of the planet. U.S. missile defenses, assuming they even work, are not designed to stop a massive Russian strike. For the 46 years of the Cold War, America and Russia were deadly rivals. But they never fought. Their proxies fought: Koreans, Vietnamese, Central Americans, Israelis and Arabs. The one time that U.S. and Soviet forces almost went to war was during the Cuban Missile Crisis. Neither Obama nor Putin is crazy enough to want to repeat that. **Russia has a powerful army**. While the Russian military is a shadow of its Soviet glory days, it is still a formidable force. The Russian army has about 300,000 men and 2,500 tanks (with another 18,000 tanks in storage), according to the “[Military Balance 2014″](http://www.iiss.org/en/militarybalanceblog/blogsections/2014-3bea/january-1138/milbal-advertorial-dfa6)  from the International Institute for Strategic Studies. Its air force has almost 1,400 aircraft, and its navy 171 ships, including 25 in the Black Sea Fleet off Ukraine’s coast. U.S. forces are more capable than Russian forces, which did not perform impressively during the [2008 Russo-Georgia War](http://en.wikipedia.org/wiki/Russo-Georgian_war). American troops would enjoy better training, communications, drones, sensors and possibly better weapons (though the latest Russian fighter jets, such as the T-50, could be trouble for U.S. pilots). However, better is not good enough. The Russian military is not composed of lightly armed insurgents like the Taliban, or a hapless army like the Iraqis in 2003. With advanced weapons like T-80 tanks, supersonic AT-15 Springer anti-tank missiles, BM-30 Smerch multiple rocket launchers and S-400 Growler anti-aircraft missiles, Russian forces pack enough firepower to inflict significant American losses. **Ukraine is closer to Russia.** The distance between Kiev and Moscow is 500 miles. The distance between Kiev and New York is 5,000 miles. It’s much easier for Russia to send troops and supplies by land than for the U.S. to send them by sea or air. **The U.S. military is tired.** After nearly 13 years of war, America’s armed forces need a breather. Equipment is worn out from long service in Iraq and Afghanistan, personnel are worn out from repeated deployments overseas, and there are still about 40,000 troops still fighting in Afghanistan. **The U.S. doesn’t have many troops to send**. The U.S. could easily dispatch air power to Ukraine if its NATO allies allow use of their airbases, and the aircraft carrier George H. W. Bush and its hundred aircraft are patrolling the Mediterranean. But for a ground war to liberate Crimea or defend Ukraine, there is just the 173rd Airborne Brigade in Italy, the 22nd Marine Expeditionary Unit sailing off Spain, the 2nd Stryker Cavalry Regiment in Germany and the 82nd Airborne Division at Fort Bragg, North Carolina. While the paratroopers could drop into the combat zone, the Marines would have sail past Russian defenses in the Black Sea, and the Stryker brigade would probably have to travel overland through Poland into Ukraine. Otherwise, bringing in mechanized combat brigades from the U.S. would be logistically difficult, and more important, could take months to organize. **The American people are tired**. Pity the poor politician who tries to sell the American public on yet another war, especially some complex conflict in a distant Eastern Europe nation. Neville Chamberlain’s words during the 1938 Czechoslovakia crisis come to mind: “How horrible, fantastic, incredible it is that we should be digging trenches and trying on gas-masks here because of a quarrel in a far away country between people of whom we know nothing.” **America‘s allies are tired**. NATO sent troops to support the American campaign in Afghanistan, and has little to show for it. Britain sent troops to Iraq and Afghanistan, and has little to show for it. It is almost inconceivable to imagine the Western European public marching in the streets to demand the liberation of Crimea, especially considering the region’s sputtering economy, which might be snuffed out should Russia stop exporting natural gas. As for military capabilities, the Europeans couldn’t evict Libyan dictator Muammar Gaddafi without American help. And Germans fighting Russians again? Let’s not even go there.

### No Nukes

#### No accidental launch

Williscroft 10 (Six patrols on the *John Marshall* as a Sonar Technician, and four on the *Von Steuben* as an officer – a total of twenty-two submerged months. Navigator and Ops Officer on *Ortolan* & *Pigeon* – Submarine Rescue & Saturation Diving ships. Watch and Diving Officer on *Oceanographer* and *Surveyor*. “Accidental Nuclear War” http://www.argee.net/Thrawn%20Rickle/Thrawn%20Rickle%2032.htm)

Is there a realistic chance that we could have a nuclear war by accident? Could a ballistic submarine commander launch his missiles without specific presidential authorization? Could a few men conspire and successfully bypass built-in safety systems to launch nuclear weapons? The key word here is “realistic.” In the strictest sense, yes, these things are possible. But are they realistically possible? This question can best be answered by examining two interrelated questions. Is there a way to launch a nuclear weapon by accident? Can a specific accidental series of events take place—no matter how remote—that will result in the inevitable launch or detonation of a nuclear weapon? Can one individual working by himself or several individuals working in collusion bring about the deliberate launch or detonation of a nuclear weapon? We are protected from accidental launching of nuclear weapons by mechanical safeguards, and by carefully structured and controlled mandatory procedures that are always employed when working around nuclear weapons. Launching a nuclear weapon takes the specific simultaneous action of several designated individuals. System designers ensured that conditions necessary for a launch could not happen accidentally. For example, to launch a missile from a ballistic missile submarine, two individuals must insert keys into separate slots on separate decks within a few seconds of each other. Barring this, the system cannot physically launch a missile. There are additional safeguards built into the system that control computer hardware and software, and personnel controls that we will discuss later, but—in the final analysis—without the keys inserted as described, there can be no launch—it’s not physically possible. Because the time window for key insertion is less than that required for one individual to accomplish, it is physically impossible for a missile to be launched accidentally by one individual. Any launch must be deliberate. One can postulate a scenario wherein a technician bypasses these safeguards in order to effect a launch by himself. Technically, this is possible, but such a launch would be deliberate, not accidental. We will examine measures designed to prevent this in a later column. Maintenance procedures on nuclear weapons are very tightly controlled. In effect always is the “two-man rule.” This rule prohibits any individual from accessing nuclear weapons or their launch vehicles alone. Aside from obvious qualification requirements, two individuals must be present. No matter how familiar the two technicians may be with a specific system, each step in a maintenance procedure is first read by one technician, repeated by the second, acknowledged by the first (or corrected, if necessary), performed by the second, examined by the first, checked off by the first, and acknowledged by the second. This makes maintenance slow, but absolutely assures that no errors happen. Exactly the same procedure is followed every time an access cover is removed, a screw is turned, a weapon is moved, or a controlling publication is updated. Nothing, absolutely nothing is done without following the written guides exactly, always under two-man control. This even applies to guards. Where nuclear weapons are concerned, a minimum of two guards—always fully in sight of each other—stand duty. There is no realistic scenario wherein a nuclear missile can be accidentally launched...ever...under any circumstances...period!

#### No nuclear strike

Graham 7 (Thomas Graham, senior advisor on Russia in the US National Security Council staff 2002-2007, 2007, "Russia in Global Affairs” The Dialectics of Strength and Weakness http://eng.globalaffairs.ru/numbers/20/1129.html)

An astute historian of Russia, Martin Malia, wrote several years ago that “Russia has at different times been demonized or divinized by Western opinion less because of her real role in Europe than because of the fears and frustrations, or hopes and aspirations, generated within European society by its own domestic problems.” Such is the case today. To be sure, mounting Western concerns about Russia are a consequence of Russian policies that appear to undermine Western interests, but they are also a reflection of declining confidence in our own abilities and the efficacy of our own policies. Ironically, this growing fear and distrust of Russia come at a time when Russia is arguably less threatening to the West, and the United States in particular, than it has been at any time since the end of the Second World War. Russia does not champion a totalitarian ideology intent on our destruction, its military poses no threat to sweep across Europe, its economic growth depends on constructive commercial relations with Europe, and its strategic arsenal – while still capable of annihilating the United States – is under more reliable control than it has been in the past fifteen years and the threat of a strategic strike approaches zero probability. Political gridlock in key Western countries, however, precludes the creativity, risk-taking, and subtlety needed to advance our interests on issues over which we are at odds with Russia while laying the basis for more constructive long-term relations with Russia.

## A2 Indopak

#### South Asian nuclear use now will be limited to an Indian counterforce strike

Vipin **Narang 17**, Professor @ Department of Political Science, Massachusetts Institute of Technology, "Plenary: Beyond the Nuclear Threshold: Causes and Consequences of First Use", https://fbfy83yid9j1dqsev3zq0w8n-wpengine.netdna-ssl.com/wp-content/uploads/2013/08/Vipin-Narang-Remarks-Carnegie-Nukefest-2017.pdf

**Everybody thinks** they know the **likeliest pathway** to nuclear first use in South Asia. It is called a conventional wisdom for a reason. It starts with a terrorist attack presumed to be from Pakistan on an Indian metropole that kills scores of civilians. Unable to exercise restraint anymore due to domestic political pressures baying for blood, the Government of India orders the mobilization of its three main strike corps and commences offensive operations across the international border, not limiting its response to the Jammu and Kashmir sector and the Line of Control. The deepest thrust is undertaken by XXI Corps and its supporting elements in the desert sector. XXI Corps threatens to bisect Pakistan’s northsouth communications, putting Pakistani conventional forces on its heels. Unable to slow down XXI Corps, Pakistan flushes out Nasr tactical nuclear weapons batteries or Abdali missiles and its Strategic Plans Division (SPD) authorizes their use either in demonstration shots, against concentrated XXI Corps armored divisions, or bridgeheads and logistics behind the main thrust to slow down the Indian offensive. India then promises what most presume is massive countervalue retaliation against Pakistani cities, leaving aside how credible or incredible that might be. This is how nuclear first use would unfold in South Asia, right? Well, maybe **not so fast**. There is increasing evidence that **India will not allow Pakistan to go first**. And that India’s opening salvo may not be conventional strikes trying to pick off just Nasr batteries in the theater, but a full ‘**comprehensive counterforce strike’** that attempts to **completely disarm Pakistan of its nuclear weapons** so that India does not have to engage in **iterative tit-for-tat exchanges** and expose its own **cities** to **nuclear destruction**. This thinking surfaces not from **fringe extreme voices** such as Bharat Karnad or retired Indian Army officers frustrated by the lack of resolve they believe their government has shown in multiple provocations, but from no less than a **former Strategic Forces Command C-in-C** Lt Gen BS **Nagal** and, perhaps more importantly and authoritatively, from the **highly respected** and **influential** former **National Security Advisor** Shivshankar **Menon** in **plain sight** in his recent 2016 book Choices: Inside the Making of Indian Foreign Policy. In short, we may be witnessing what I call a ‘**decoupling’ of Indian nuclear strategy** between China and Pakistan. The force requirements India needs in order to **credibly threaten assured retaliation against China** may allow it to pursue **more aggressive strategies**—such as escalation dominance or a ‘**splendid first strike’—against Pakistan**. We may be seeing the emergence of this decoupling, or at least 2 serious mainstream thinking about it, with the intention being a **disarming strike against Pakistan.**

#### It's successful and wipes out Pakistan’s nukes---India has supersonic missiles---BMD fails against those

Christine **Leah 18**, visiting fellow at the Centre for International Strategic Studies (CISS), working on conventional arms sales and conventional and nuclear arms control in South Asia, “Counterforce to counter what?”, https://nation.com.pk/31-Jan-2018/counterforce-to-counter-what

With India developing its indigenous defence industry, and acquiring technology from the West as well, it seems to be on a track to gain an edge over its South Asian neighbors, **especially Pakistan**. This includes the acquisition/development with other countries on technology such as **cruise missiles**, **Airborne Warning and Control Systems** (**AWACS**), and **strike aircraft**. Of these, inciting concern is India’s growing air combat and ground strike capacity based on **Su-30 MKI,** **Mirage-2000H**, **Jaguar** strike aircraft, **Tu-22M backfire bombers**, and more recently, **C-295 transport aircraft**, and the **French Rafale** which **augment its capacity to go after its counterforce targets.** Moreover, major arms sales to India in the last decade include **U.S. F-16s and guided bombs for Jaguar aircraft**. From France, the sales include **36 French-built Rafale planes**, **six Scorpene submarines**, upgrades to 49 Mirage-2000-5, air-to air missiles for these planes and a huge sale of **126 multi-role medium combat aircraft**. Similarly, Russia has exported combat aircraft such as 270 Su-30s, 45 naval Mig-29Ks, 150 Mi-17 transport helicopters and ten Ka-31 helicopters. In 2006, the DRDO and a Russian venture jointly developed the **BrahMos cruise missile** — a supersonic missile that combines Russian propulsion technology and new Indian guidance technology. BrahMos cruise missile can **reach supersonic speed and thus bypass surface-to-air missile defense systems**. Israel has also transferred electronic warfare technology and precision-guided munitions. The Indian-Israeli arms trade amounts to more than $2 billion annually. In 2004, the British company BAE Systems won a deal to sell advanced jet trainers to the Indian Air Force. In 2007, India paid the United States $50 million for the amphibious USS Trenton, and in 2009, Boeing won a $2 billion order for eight P-8 maritime reconnaissance aircraft and Lockheed Martin won a $1 billion contract for six C-1301J transport aircraft. Together with former U.S. President Barack Obama also offered to sell C-17 and F-414 aircraft. More so, India’s inclusion into the Missile Technology Control Regime gives it **access to technology** that is **normally restricted for non-members**. By stark contrast, the Pakistan Air Force has been denied state of the art aircraft acquisitions for two decades, and has been limited to refurbishing older high-performance aircraft. India is also expanding its naval capabilities, including a sea-based strike force as the logical step in its quest for an assured retaliatory capability. In turn, Pakistan’s naval nuclear developments are fueled by nuclear developments on the Indian side, an understandable reaction but one which has drawn considerable criticism. The drone technology which has been easily accessible to India is another controversial issue. Recently, the U.S. made a sales agreement with New Delhi for naval drones. It has been reported that Washington does not deem its sale of naval drones to India to be threatening for Pakistan, as it considers that these are not armed but are only intended for surveillance across the Indian Ocean. However, **AWACS**, **drones**, and other sophisticated **surveillance and reconnaissance capabilities** make India’s conventional strikes **more effective**, as well as enabling it to achieve air superiority more quickly. The accumulation of all this has **increased threat to the survivability of Pakistani nuclear delivery systems**. Indeed, it is capabilities like precision-guided munitions/guided bombs, in this particular strategic context, that make Pakistan more **vulnerable** to an **Indian pre-emptive strike.**

#### Otherwise, Pakistan’s nukes are vulnerable---causes global nuclear war

William **Pitt 9**, a New York Times and internationally bestselling author of two books: "War on Iraq: What Team Bush Doesn't Want You to Know" and "The Greatest Sedition Is Silence”, “Unstable Pakistan Threatens the World,” http://www.arabamericannews.com/news/index.php?mod=article&cat=commentary&article=2183

But a suicide bomber in Pakistan rammed a car packed with explosives into a jeep filled with troops today, killing five and wounding as many as 21, including several children who were waiting for a ride to school. Residents of the region where the attack took place are fleeing in terror as gunfire rings out around them, and government forces have been unable to quell the violence. Two regional government officials were beheaded by militants in retaliation for the killing of other militants by government forces. As familiar as this sounds, it did not take place where we have come to expect such terrible events. This, unfortunately, is a whole new ballgame. It is part of another conflict that is brewing, one which puts what is happening in Iraq and Afghanistan in deep shade, and which represents a grave and growing threat to us all. Pakistan is now trembling on the edge of **violent chaos**, and is doing so with **nuclear weapons** in its hip pocket, right in the middle of one of the **most dangerous neighborhoods in the world**.The situation in brief: Pakistan for years has been a nation in turmoil, run by a shaky government supported by a corrupted system, dominated by a blatantly criminal security service, and threatened by a large fundamentalist Islamic population with deep ties to the Taliban in Afghanistan. All this is piled atop an ongoing standoff with neighboring India that has been the center of political gravity in the region for more than half a century. The fact that **Pakistan**, and **India**, and **Russia**, and **China** all possess nuclear weapons and share the same space means **any** ongoing or escalating **violence** over there has the real potential to **crack open the very gates of Hell** itself. Recently, the Taliban made a military push into the northwest Pakistani region around the Swat Valley. According to a recent Reuters report: The (Pakistani) army deployed troops in Swat in October 2007 and used artillery and gunship helicopters to reassert control. But insecurity mounted after a civilian government came to power last year and tried to reach a negotiated settlement. A peace accord fell apart in May 2008. After that, hundreds — including soldiers, militants and civilians — died in battles. Militants unleashed a reign of terror, killing and beheading politicians, singers, soldiers and opponents. They banned female education and destroyed nearly 200 girls' schools. About 1,200 people were killed since late 2007 and 250,000 to 500,000 fled, leaving the militants in virtual control. Pakistan offered on February 16 to introduce Islamic law in the Swat valley and neighboring areas in a bid to take the steam out of the insurgency. The militants announced an indefinite cease-fire after the army said it was halting operations in the region. President Asif Ali Zardari signed a regulation imposing sharia in the area last month. But the Taliban refused to give up their guns and pushed into Buner and another district adjacent to Swat, intent on spreading their rule. The United States, already embroiled in a war against Taliban forces in Afghanistan, must now face the possibility that Pakistan could collapse under the mounting threat of Taliban forces there. Military and diplomatic advisers to President Obama, uncertain how best to proceed, now face one of the great nightmare scenarios of our time. "Recent militant gains in Pakistan," reported The New York Times on Monday, "have so alarmed the White House that the national security adviser, Gen. James L. Jones, described the situation as 'one of the very most serious problems we face.'" "Security was deteriorating rapidly," reported The Washington Post on Monday, "particularly in the mountains along the Afghan border that harbor al-Qaeda and the Taliban, intelligence chiefs reported, and there were signs that those groups were working with indigenous extremists in Pakistan's populous Punjabi heartland. The Pakistani government was mired in political bickering. The army, still fixated on its historical adversary India, remained ill-equipped and unwilling to throw its full weight into the counterinsurgency fight. But despite the threat the intelligence conveyed, Obama has only limited options for dealing with it. Anti-American feeling in Pakistan is high, and a U.S. combat presence is prohibited. The United States is fighting Pakistan-based extremists by proxy, through an army over which it has little control, in alliance with a government in which it has little confidence." It is believed Pakistan is currently in possession of between 60 and 100 nuclear weapons. Because Pakistan's stability is threatened by the wide swath of its population that shares ethnic, cultural and religious connections to the fundamentalist Islamic populace of Afghanistan, fears over what could happen to those nuclear weapons if the Pakistani government collapses are very real. "As the insurgency of the Taliban and Al Qaeda spreads in Pakistan," reported the Times last week, "senior American officials say they are increasingly concerned about new vulnerabilities for Pakistan's nuclear arsenal, including the potential for **militants to snatch a weapon** in transport or to insert sympathizers into laboratories or fuel-production facilities. In public, the administration has only hinted at those concerns, repeating the formulation that the Bush administration used: that it has faith in the Pakistani Army. But that cooperation, according to officials who would not speak for attribution because of the sensitivity surrounding the exchanges between Washington and Islamabad, has been sharply limited when the subject has turned to the vulnerabilities in the Pakistani nuclear infrastructure." "The prospect of turmoil in Pakistan sends shivers up the spinesof those U.S. officials charged with keeping tabs on foreign nuclear weapons," reported Time Magazine last month. "Pakistan is thought to possess about 100 — the U.S. isn't sure of the total, and may not know where all of them are. Still, if Pakistan collapses, the U.S. military is primed to enter the country and secure as many of those weapons as it can, according to U.S. officials. Pakistani officials insist their personnel safeguards are stringent, but a sleeper cell could cause big trouble, U.S. officials say." In other words, a shaky Pakistan spells trouble for everyone, especially if America loses the footrace to secure those weapons in the event of the worst-case scenario. If Pakistani militants ever succeed in toppling the government, several very dangerous events could happen at once. Nuclear-armed **India could be galvanized into military action of some kind, as could nuclear-armed China or nuclear-armed Russia.** If the Pakistani government does fall, and all those Pakistani nukes are not immediately accounted for and secured, the specter (or reality) of **loose nukes falling into the hands of terrorist organizations could place the entire world on a collision course with unimaginable disaster.** We have all been paying a great deal of attention to Iraq and Afghanistan, and rightly so. The developing situation in Pakistan, however, needs to be placed immediately on the front burner. The Obama administration appears to be gravely serious about addressing the situation. So should we all.

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Frontlines

### 2NC --- Wall

#### Stopping Indo-Pak escalation in the short term is bad--- India executes a comprehensive counterforce strike against Pakistan that eliminates nuclear capabilities without retaliation or an escalatory spiral---that’s Narang, Leah, and Keck

#### Solves loose nukes---outweighs warming--- terrorist acquiring nukes cause multi-state nuclear warfare in a faster timeframe, involving Russia, China, India, and the US---that’s Pitt

#### causes U.S.-Russia war---extinction

**Barrett et al. 13** – PhD in Engineering and Public Policy from Carnegie Mellon University, Fellow in the RAND Stanton Nuclear Security Fellows Program, and Director of Research at Global Catastrophic Risk Institute—AND Seth Baum, PhD in Geography from Pennsylvania State University, Research Scientist at the Blue Marble Space Institute of Science, and Executive Director of Global Catastrophic Risk Institute—AND Kelly Hostetler, BS in Political Science from Columbia and Research Assistant at Global Catastrophic Risk Institute, Anthony, 24 June 2013, “Analyzing and Reducing the Risks of Inadvertent Nuclear War Between the United States and Russia,” Science & Global Security: The Technical Basis for Arms Control, Disarmament, and Nonproliferation Initiatives, Volume 21, Issue 2, Taylor & Francis

War involving significant fractions of the U.S. and Russian nuclear arsenals, which are by far the largest of any nations, could have **globally catastrophic effects** such as severely **reducing food production** for years, 1 potentially leading to **collapse of modern civilization** worldwide, and even the **extinction** of humanity. 2 Nuclear war between the United States and Russia could occur by various routes, including accidental or unauthorized launch; deliberate first attack by one nation; and inadvertent attack. In an accidental or unauthorized launch or detonation, system safeguards or procedures to maintain control over nuclear weapons fail in such a way that a nuclear weapon or missile launches or explodes without direction from leaders. In a deliberate first attack, the attacking nation decides to attack based on accurate information about the state of affairs. In an inadvertent attack, the attacking nation mistakenly concludes that it is under attack and launches nuclear weapons in what it believes is a counterattack. 3 (Brinkmanship strategies incorporate elements of all of the above, in that they involve intentional manipulation of risks from otherwise accidental or inadvertent launches. 4 ) Over the years, nuclear strategy was aimed primarily at minimizing risks of intentional attack through development of deterrence capabilities, and numerous measures also were taken to reduce probabilities of accidents, unauthorized attack, and inadvertent war. For purposes of deterrence, both U.S. and Soviet/Russian forces have maintained significant capabilities to have some forces survive a first attack by the other side and to launch a subsequent counter-attack. However, concerns about the extreme disruptions that a first attack would cause in the other side's forces and command-and-control capabilities led to both sides’ development of capabilities to detect a first attack and launch a counter-attack before suffering damage from the first attack. 5 Many people believe that with the end of the Cold War and with improved relations between the United States and Russia, the risk of East-West nuclear war was significantly reduced. 6 However, it also has been argued that inadvertent nuclear war between the United States and Russia has continued to present a **substantial risk**. 7 While the United States and Russia are not actively threatening each other with war, they have **remained ready** to **launch nuclear missiles** in response to indications of attack. 8 False indicators of nuclear attack could be caused in several ways. First, a wide range of events have already been mistakenly interpreted as indicators of attack, including weather phenomena, a faulty computer chip, wild animal activity, and control-room training tapes loaded at the wrong time. 9 Second, **terrorist groups** or other actors might **cause attacks** on either the United States or Russia that **resemble** some kind of **nuclear attack by the other nation** by actions such as exploding a stolen or improvised nuclear bomb, 10 especially if such an event occurs during a crisis between the United States and Russia. 11 A variety of nuclear terrorism scenarios are **possible**. 12 Al Qaeda has sought to obtain or construct nuclear weapons and to use them against the United States. 13 Other methods could involve attempts to circumvent nuclear weapon launch control safeguards or exploit holes in their security. 14 It has long been argued that the probability of inadvertent nuclear war is significantly higher during U.S.–Russian crisis conditions, 15 with the Cuban Missile Crisis being a prime historical example. It is possible that U.S.–Russian relations will significantly deteriorate in the future, increasing nuclear tensions. There are a variety of ways for a third party to raise tensions between the United States and Russia, making one or both nations more likely to misinterpret events as attacks. 16

#### Other nuke wars are comparatively smaller

**Barratt et al. 17** — Owen Cotton-Barratt, et al, PhD in Pure Mathematics, Oxford, Lecturer in Mathematics at Oxford,  Research Associate at the Future of Humanity Institute, 2/3/2017, Existential Risk: Diplomacy and Governance, https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf

The bombings of Hiroshima and Nagasaki demonstrated the unprecedented destructive power of nuclear weapons. However, even in an all-out nuclear war between the United States and Russia, despite horrific casualties, neither country’s population is likely to be completely destroyed **by the direct effects of the blast**, fire, and radiation.8 The aftermath could be **much worse**: the burning of flammable materials could send massive amounts of smoke into the atmosphere, which would absorb sunlight and cause sustained global cooling, severe ozone loss, and agricultural disruption – **a nuclear winter**. According to one model 9 , an all-out exchange of 4,000 weapons10 could lead to a drop in global temperatures of around 8°C, making it **impossible to grow food for** 4 to **5 years**. This could leave some survivors in parts of Australia and New Zealand, but they would be in a very precarious situation and the **threat of extinction from other sources would be great**. An exchange on this scale is **only possible between the US and Russia** who have more than 90% of the world’s nuclear weapons, with stockpiles of around 4,500 warheads each, although many are not operationally deployed.11 Some models suggest that even a small regional nuclear war involving 100 nuclear weapons would produce a nuclear winter serious enough to put two billion people at risk of starvation,12 though this estimate **might be pessimistic**.13 Wars on this scale are **unlikely to lead to** outright **human extinction**, but this does suggest that conflicts which are around an order of magnitude larger may be likely to threaten civilisation. It should be emphasised that there is very large uncertainty about the effects of a large nuclear war on global climate. This remains an area where increased academic research work, including more detailed climate modelling and a better understanding of how survivors might be able to cope and adapt, would have high returns.

#### Pakistan’s nukes are the shield they use to sustain terror sponsorship

**Economic Times 18**, “Pakistan may soon have world's third largest nuke stockpile”, https://economictimes.indiatimes.com/news/defence/pakistan-may-soon-have-worlds-third-largest-nuke-stockpile/articleshow/63906708.cms

Micallef mentions that since the late 1980s, Pakistan has used a variety of **militant organisations** as **proxies** in its ongoing struggle with India over Kashmir and elsewhere. He certifies that the Pakistan Army's Inter-Services Intelligence (**ISI**) **sponsors**, **organises**, **trains** and **funds** terror outfits operating from its soil such as the **Lashkar-e-Taiba**, **al-Qaida**, Lashkar-e-Omar, **Jaish-e-Mohammed**, Sipah-e-Sahaba, the Jammu Kashmir Liberation Front (JKLF), Jamaat-ud-Da'wah, Harkat-ud-Jihad al-Islami, **the Haqqani Network**, Jamaat-ud-Mujahideen Bangladesh (JMB) and the **Afghan Taliban**, and uses them as proxies for its covert military operations. According to Micallef, since 1990, Pakistan's military strategy has followed a three-fold approach **(1)** use militant proxy organizations to strike at Indian military positions in Kashmir **(2)** rely on the **threat to deploy nuclear weapons** should India try to retaliate with a **military invasion of Pakistan** and (3) rely on the U.S. and China, in particular, and world opinion in general, to **restrain** India from attacking Pakistan.

#### It’s reverse causal---killing the ISI is key to Afghan stability and the US winning the war

Howard **Kleinberg 12**, Research Analyst @ The George C. Marshall Institute, “To Win in Afghanistan, Destroy Pakistan's ISI”, American Intelligence Journal, Vol. 30, No. 2 (2012), pp. 120-124

**Warfare-strategy theory** holds that the **further up** the enemy's chain of command one aims, **the greater the effect on the enemy**. As noted theorist Sir Arthur Liddell-Hart points out, “In general, the nearer to the force that the communications cut is made, the more immediate the effect: the nearer to the base, the greater the effect. ... Thus... more success and more effect is to be expected from cutting his communications as far back as possible. A further consideration is that, while a stroke close in rear of the enemy force may have more effect on the minds of the enemy troops. a stroke far back tends to have more effect on the mind of the enemy commander.” In line with this theory, neither attacking nor negotiating with the Taliban/Haqqani networks will in and of itself achieve a lasting peace or victory in Afghanistan: this is ultimately, because **they are not acting alone**, nor are they even the masters of their own destiny. Rather, the true "brains" (and money, etc.) behind the insurgency in Afghanistan is not the Taliban or Haqqani themselves: **it is the Pakistani military** or, more specifically, **Pakistan's Inter-Security Intelligence agency**, or **ISI**. As "the premier intelligence agency of the State of Pakistan,"' the ISI is the eyes, ears, and nervous system linking the Pakistani military to **support** and **mastermind** these insurgent groups. Indeed, the Pakistani military, through the ISI, **intends to re-conquer and rule Afghanistan through its Taliban and Haqqani proxies**, just as it did in the 1990s, after the Soviets withdrew.' The ISI is helping the Taliban in the latter's quest to re-conquer and rule Afghanistan and has been doing so since at least as far back in time as the defeat of the Soviets and their withdrawal from Afghanistan. This is because the ISI sees the Taliban as a useful ally to counter India and, in order to influence and control Afghanistan via a powerful and compliant proxy, has used it as such, **in the past to terrible effect.** There is plenty of contemporary and recent evidence proving that the ISI is not merely complicit in the war against the U.S, and the International Security Assistance Force (ISAF) in Afghanistan, but more, i.e., that it is **masterminding the war against the U.S.** For instance, the ISI is widely held responsible for the "professional hit" assassination of the Taliban's **chief peace negotiator** in Afghanistan in May 2012. Furthermore, the "apparent" failure of the Pakistani army border liaison to alert ISAF forces of Pakistani army forces just inside the Pakistani border with Afghanistan makes the Pakistani Army (and with it, the ISI), and not the U.S., responsible for the loss of 28 Pakistani Army soldiers, **for which NATO has instead been wrongly burdened with the blame**. This incident provided the convenient (for the Pakistani army and ISI) excuse to raise domestic **outrage against the US** in order to **justify ousting US forces** and shutting down supply routes from Pakistan to Afghanistan in 2011.

#### Anything else kills NATO

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It was, of course, al-Qaeda’s attack on the US homeland that triggered the intervention in Afghanistan, but wars, once started, always involve broader considerations than those present at the firing of the first shot. The war in **Afghanistan now affects all of America’s interests across South Asia: Pakistan’s stability and the security of its nuclear weapons, NATO’s credibility, relations with Iran and Russia, transnational drug-trafficking networks, and more.** America leaves the job in Afghanistan unfinished at its peril. The chorus of voices in the Washington policy establishment calling for withdrawal is growing louder. In response to this pressure, President Obama has pledged to withdraw the surge of thirty thousand US troops by September 2012—faster than US military commanders have recommended—and fully transition leadership for the country’s security to the Afghans in 2013. These decisions mirror the anxieties of the electorate: fifty-six percent of Americans surveyed recently by the Pew Research Center said that the US should remove its troops as soon as possible. But it is not too late for Obama (who, after all, campaigned in 2008 on the importance of Afghanistan, portraying it as “the good war” in comparison to Iraq) to reformulate US strategy and goals in South Asia and explain to the American people and the world why an ongoing commitment to stabilizing Afghanistan and the region, however unpopular, is nonetheless necessary. The Afghanistan Study Group, a collection of scholars and former policymakers critical of the current intervention, argued in 2010 that al-Qaeda is no longer in Afghanistan and is unlikely to return, even if Afghanistan reverts to chaos or Taliban rule. It argued that three things would have to happen for al-Qaeda to reestablish a safe haven and threaten the United States: “1) the Taliban must seize control of a substantial portion of the country, 2) Al Qaeda must relocate there in strength, and 3) it must build facilities in this new ‘safe haven’ that will allow it to plan and train more effectively than it can today.” Because all three are unlikely to happen, the Study Group argued, al-Qaeda almost certainly will not reestablish a presence in Afghanistan in a way that threatens US security. In fact, none of those three steps are necessary for al-Qaeda to regain its safe haven and threaten America. The group could return to Afghanistan even if the Taliban do not take back control of the country. It could—and probably would—find safe haven there if Afghanistan relapsed into chaos or civil war. Militant groups, including al-Qaeda offshoots, have gravitated toward other failed states, like Somalia and Yemen, but Afghanistan remains especially tempting, given the network’s familiarity with the terrain and local connections. Nor does al-Qaeda, which was never numerically overwhelming, need to return to Afghanistan “in strength” to be a threat. Terrorist operations, including the attacks of 2001, are typically planned and carried out by very few people. Al-Qaeda’s resilience, therefore, means that stabilizing Afghanistan is, in fact, necessary even for the most basic US war aims. The international community should not withdraw until there is an Afghan government and Afghan security forces with the will and capacity to deny safe haven without international help. Setting aside the possibility of al-Qaeda’s reemergence, the United States has other important interests in the region as well—notably preventing the Taliban from gaining enough power to destabilize neighboring Pakistan, which, for all its recent defiance, is officially a longstanding American ally. (It signed two mutual defense treaties with the United States in the 1950s, and President Bush designated it a major non-NATO ally in 2004.) State failure in Pakistan brokered by the Taliban could mean regional chaos and a possible loss of control of its nuclear weapons. Preventing such a catastrophe is clearly a vital national interest of the United States and cannot be accomplished with a few drones. Alarmingly, Pakistan is edging toward civil war. A collection of militant Islamist groups, including al-Qaeda, Tehrik-e Taliban Pakistan (TTP), and Tehrik-e Nafaz-e Shariat-e Mohammadi (TNSM), among others, are fighting an insurgency that has escalated dramatically since 2007 across Khyber Pakhtunkhwa, the Federally Administered Tribal Areas, and Baluchistan. According to the Brookings Institution’s Pakistan Index, insurgents, militants, and terrorists now regularly launch more than one hundred and fifty attacks per month on Pakistani government, military, and infrastructure targets. In a so far feckless and ineffectual response, Pakistan has deployed nearly one hundred thousand regular army soldiers to its western provinces. At least three thousand soldiers have been killed in combat since 2007, as militants have been able to seize control of whole towns and districts. Tens of thousands of Pakistani civilians and militants—the distinction between them in these areas is not always clear—have been killed in daily terror and counterterror operations. **The two insurgencies in Afghanistan and Pakistan are linked. Defeating the Afghan Taliban would give the United States and Pakistan momentum in the fight against the Pakistani Taliban**. A Taliban takeover in Afghanistan, on the other hand, will give **new strength to the Pakistani insurgency**, which would gain an ally in Kabul, safe haven to train and arm and from which to launch attacks into Pakistan, and a huge morale boost in seeing their compatriots win power in a neighboring country. Pakistan’s collapse or fall to the Taliban is (at present) unlikely, but the implications of that scenario are so dire that they cannot be ignored. Even short of a collapse, increasing chaos and instability in Pakistan could give cover for terrorists to increase the intensity and scope of their operations, perhaps even to achieve the cherished goal of **stealing a nuclear weapon.** Although our war there has at times seemed remote, **Afghanistan itself occupies crucial geography**. Situated between Iran and Pakistan, bordering China, and within reach of Russia and India, **it sits on a crossroads of Asia’s great powers.** This is why it has, since the nineteenth century, been home to the so-called Great Game—in which the US should continue to be a player. Two other players, Russia and Iran, are aggressive powers seeking to establish hegemony over their neighbors. Iran is seeking to build nuclear weapons, has an elite military organization (the Quds Force) seeking to export its Islamic Revolution, and uses the terror group Hezbollah as a proxy to bully neighboring countries and threaten Israel. Russia under Vladimir **Putin is seeking to reestablish its sphere of influence** over its near abroad, in pursuit of which it (probably) cyber-attacked Estonia in 2007, invaded Georgia in 2008, and has continued efforts to subvert Ukraine. Iran owned much of Afghan territory centuries ago, and continues to share a similar language, culture, and religion with much of the country. It maintains extensive ties with the Taliban, Afghan warlords, and opposition politicians who might replace the corrupt but Western-oriented Karzai government. **Building a stable government** in Kabul **will** be a small step in the larger campaign to **limit Tehran’s influence**. Russia remains heavily involved in the Central Asian republics. It has worked to oust the United States from the air base at Manas, Kyrgyzstan. It remains interested in the huge energy reserves in Kazakhstan and Turkmenistan. Russia may be wary of significant involvement in Afghanistan proper, unwilling to repeat the Soviet Union’s epic blunder there. But **a US withdrawal** from Afghanistan followed by Kabul’s collapse **would** likely **embolden Russia to assert its influence more aggressively elsewhere in** Central **Asia or** Eastern **Europe,** especially in the Ukraine. **A US departure** from Afghanistan **will** also continue to **resonate for** years to come in the strength and purpose of NATO. Every American president since Harry Truman has affirmed the centrality of the Atlantic Alliance to US national security. The war in Afghanistan under the NATO-led International Security Assistance Force (ISAF), the Alliance’s first out-of-area operation in its sixty-year history, was going poorly until the US troop surge. Even with the limited success that followed, allies have complained that the burden in Afghanistan has been distributed unevenly. Some, like the British, Canadians, and Poles, are fighting a shooting war in Kandahar and Helmand, while others, like the Lithuanians and Germans, are doing peacekeeping in Ghor and Kunduz. The poor command and control—split between four regional centers—left decisionmaking slow and poorly coordinated for much of the war. ISAF’s strategy was only clarified in 2008 and 2009, when Generals David McKiernan and Stanley McChrystal finally developed a more coherent campaign plan with counterinsurgency-appropriate rules of engagement. **A bad end in Afghanistan could have dire consequences for the Atlantic Alliance**, leaving the organization’s future, and especially **its credibility as a deterrent to Russia, in question**. It would not be irrational for a Russian observer of the war in Afghanistan to conclude that if NATO cannot make tough decisions, field effective fighting forces, or distribute burdens evenly, it cannot defend Europe. The United States and Europe must prevent that outcome by salvaging a credible result to its operations in Afghanistan—one that both persuades Russia that NATO is still a fighting alliance and preserves the organization as a pillar of US national security.

#### Nuke war

Zbigniew **Brzezinski 9**, former U.S. National Security Adviser, “An Agenda for NATO,” Foreign Affairs, 88.5, Sept/Oct 2009, EBSCOHost

NATO's potential is not primarily military. Although NATO is a collective-security alliance, its actual military power comes predominantly from the United States, and that reality is not likely to change anytime soon. NATO's real power derives from the fact that it combines the United States' military capabilities and economic power with Europe's collective political and economic weight (and occasionally some limited European military forces). Together, that **combination makes NATO globally significant**. It must therefore remain sensitive to the importance of safeguarding the geopolitical bond between the United States and Europe as it addresses new tasks. The basic challenge that NATO now confronts is that there are historically unprecedented risks to global security. Today's world is threatened neither by the militant fanaticism of a territorially rapacious nationalist state nor by the coercive aspiration of a globally pretentious ideology embraced by an expansive imperial power. The paradox of our time is that the world, increasingly connected and economically interdependent for the first time in its entire history, is experiencing intensifying popular unrest made all the more menacing by the growing accessibility of **w**eapons of **m**ass **d**estruction -- not just to states but also, potentially, to extremist religious and political movements. Yet there is no effective global security mechanism for coping with the growing threat of violent political chaos stemming from humanity's recent political awakening. The three great political contests of the twentieth century (the two world wars and the Cold War) accelerated the political awakening of mankind, which was initially unleashed in Europe by the French Revolution. Within a century of that revolution, spontaneous populist political activism had spread from Europe to East Asia. On their return home after World Wars I and II, the South Asians and the North Africans who had been conscripted by the British and French imperial armies propagated a new awareness of anticolonial nationalist and religious political identity among hitherto passive and pliant populations. The spread of literacy during the twentieth century and the wide-ranging impact of radio, television, and the Internet accelerated and intensified this mass global political awakening. In its early stages, such new political awareness tends to be expressed as a fanatical embrace of the most extreme ethnic or fundamentalist religious passions, with beliefs and resentments universalized in Manichaean categories. Unfortunately, in significant parts of the developing world, bitter memories of European colonialism and of more recent U.S. intrusion have given such newly aroused passions a distinctively anti-Western cast. Today, the most acute example of this phenomenon is found in an area that stretches from **Egypt** to **India**. This area, inhabited by more than 500 million politically and religiously aroused peoples, is where NATO is becoming more deeply embroiled. Additionally complicating is the fact that the dramatic rise of China and India and the quick recovery of Japan within the last 50 years have signaled that the global center of political and economic gravity is shifting away from the North Atlantic toward Asia and the Pacific. And of the currently leading global powers -- the United States, the EU, China, Japan, Russia, and India -- at least two, or perhaps even three, are revisionist in their orientation. Whether they are "rising peacefully" (a self-confident China), truculently (an imperially nostalgic Russia) or boastfully (an assertive India, despite its internal multiethnic and religious vulnerabilities), they all desire a change in the global pecking order. The future conduct of and relationship among these three still relatively cautious revisionist powers will further intensify the strategic uncertainty. Visible on the horizon but not as powerful are the emerging regional rebels, with some of them defiantly reaching for nuclear weapons. **North Korea** has openly flouted the international community by producing (apparently successfully) its own nuclear weapons -- and also by profiting from their dissemination. At some point, its **unpredictability could precipitate the first use of nuclear weapons** in anger since 1945. Iran, in contrast, has proclaimed that its nuclear program is entirely for peaceful purposes but so far has been unwilling to consider consensual arrangements with the international community that would provide credible assurances regarding these intentions. In nuclear-armed Pakistan, an extremist anti-Western religious movement is threatening the country's political stability. These changes together reflect the waning of the post-World War II global hierarchy and the simultaneous dispersal of global power. Unfortunately, U.S. leadership in recent years unintentionally, but most unwisely, contributed to the currently threatening state of affairs. The combination of Washington's arrogant unilateralism in Iraq and its demagogic Islamophobic sloganeering weakened the unity of NATO and focused aroused Muslim resentments on the United States and the West more generally.

#### solves Chinese expansionism into Tibet and Xinjiang

Mohan **Malik 2**, PhD, came to the Asia-Pacific Center for Security Studies in February 2001 from Deakin University in Australia where he was Director of the postgraduate Defense Studies Program, “Nervous Neig” The World Today, Vol. 58, No. 10 (October 2002), pp. 20-23

Should the Indo-Pakistani conflict **escalate into a nuclear one**, neither the geopolitical nor radioactive fallout would remain in South Asia. China would face difficult choices. Open support for its most allied ally would jeopardize relations with the US and India. But non- intervention on Pakistan's behalf could encourage India to solve the **Pakistan 'problem' once and for all**, tilting the regional balance of power **decisively in its favor**. **Unrestrained Indian power** could eventually **threaten China's security** along its soft underbelly - **Tibet and Xinjiang.**

#### Global nuclear war

Jeremy **Kahn 9**, Pew International Journalism Fellow – Johns Hopkins University and Former Managing Editor – New Republic, “Why India Fears China”, Newsweek, 10-10, http://www.newsweek.com/id/217088

China claims some 90,000 square kilometers of Indian territory. And most of those claims are tangled up with Tibet. Large swaths of India's northern mountains were once part of Tibet. Other stretches belonged to semi-independent kingdoms that paid fealty to Lhasa. Because Beijing now claims Tibet as part of China, it has by extension sought to claim parts of India that it sees as historically Tibetan, a claim that has become increasingly flammable in recent months. Ever since the anti-Chinese unrest in Tibet last year, progress toward settling the border dispute has stalled, and the situation has taken a dangerous turn. The emergence of videos showing Tibetans beating up Han Chinese shopkeepers in Lhasa and other Tibetan cities created immense domestic pressure on Beijing to crack down. The Communist Party leadership worries that agitation by Tibetans will only encourage unrest by the country's other ethnic minorities, such as Uighurs in Xinjiang or ethnic Mongolians in Inner Mongolia, threatening China's integrity as a nation. Susan Shirk, a former Clinton-administration official and expert on China, says that "in the past, Taiwan was the 'core issue of sovereignty,' as they call it, and Tibet was not very salient to the public." Now, says Shirk, Tibet is considered a "core issue of national sovereignty" on par with Taiwan. The implications for India's security—and the world's—are ominous. **It turns** what was once an obscure argument over lines on a 1914 map and some **barren**, rocky **peaks** hardly worth fighting over **into a flash point that could** **spark a war between two nuclear-armed neighbors**. And that makes the India-China border dispute into an issue of concern to far more than just the two parties involved. The United States and Europe as well as the rest of Asia ought to take notice—**a conflict involving India and China could result in a nuclear exchange**. And it could suck the West in—either as an ally in the defense of Asian democracy, as in the case of Taiwan, or as a mediator trying to separate the two sides. Beijing appears increasingly concerned about the safe haven India provides to the Dalai Lama and to tens of thousands of Tibetan exiles, including increasingly militant supporters of Tibetan independence. These younger Tibetans, many born outside Tibet, are growing impatient with the Dalai Lama's "middle way" approach—a willingness to accept Chinese sovereignty in return for true autonomy—and commitment to nonviolence. If these groups were to use India as a base for armed insurrection against China, as Tibetan exiles did throughout the 1960s, then China might retaliate against India. By force or demand, Beijing might also seek to gain possession of important Tibetan Buddhist monasteries that lie in Indian territory close to the border. Both politically and culturally, these monasteries are seen as key nodes in the Tibetan resistance to Chinese authority.

#### D. No risk of Pakistani retaliation because India has highly-advanced BMD, which can shoot down all of Pakistan’s cruise missiles and ballistic missiles in the status quo

#### BUT counterforce now is key---waiting lets Pakistan acquire workable supersonic missiles---makes BMD irrelevant

Vishnu **Som 19**, "Game-Changing Chinese Missile To Pak Could Dent Navy's BrahMos Advantage", NDTV, https://www.ndtv.com/india-news/game-changing-chinese-missile-to-pakistan-could-dent-navys-brahmos-advantage-1975148

A game-changing **Chinese** anti-ship **missile**, capable of flying at **three times the speed of sound**, could erode a key missile advantage the Indian Navy has enjoyed over the Pakistani Navy since 2005. An export variant of the YJ-12 missile, the CM-302, is likely to be the primary weapon on board four new Chinese frigates being built for the Pakistan Navy at the Hudong-Zhonghua shipyard in Shanghai. The CM-302 matches both the supersonic speed and the range of the **Indian** Navy's **BrahMos** anti-ship **cruise missiles**, which have been deployed on several front-line frigates and destroyers of the Navy. Senior defence officials monitoring the sale of new generation Chinese Type 054 frigates to Pakistan have told NDTV that the ships are likely to come armed with the CM-302, which they identify as a "new threat which represents a new capability." But these officers also tell NDTV that "there is a **long way to go** for these missiles to become a **credible threat** for the Indian Navy" since the Pakistan Navy still lacks **long-range sensors** which need to **target Indian platforms** before a CM-302 can **actually be fired**. "Possessing accurate targeting data, surveillance capability, and having the ability to penetrate a dense [Indian Navy] electronic counter-measures environment are a part of a **complex matrix**" that the Pakistan Navy's new frigates would need to overcome before they can **attempt a missile launch**. **Still, the acquisition of the CM-302 onboard the new Chinese-built frigates that will be inducted from 2021 means a lethal new capability for the Pakistan Navy.**

#### AND Pakistan would retaliate with countervalue attacks

Sadia **Tasleem 16**, lecturer at Quaid-i-Azam University’s Department of Defense and Strategic Studies, "Pakistan’s Nuclear Use Doctrine", Carnegie Endowment for International Peace, https://carnegieendowment.org/2016/06/30/pakistan-s-nuclear-use-doctrine-pub-63913

India and Pakistan have fought at least three wars and had five major military crises in the past sixty eight years. Some scholars argue that though there may not be any formal mechanism for escalation control in South Asia, the region’s history and culture indicates an implicit tendency toward restraint from escalation. They further argue that the restraint shown by India and Pakistan in their wars of 1965 and 1971—choosing not to attack each other’s industrial complexes and irrigation dams—reflected a tacit understanding of each other’s vulnerabilities. However, the presence of nuclear weapons has fundamentally altered some of these ground realities. For instance, given **Pakistan’s existing countervalue-targeting strategy**, which **does not** distinguish between **civilian** and military targets, it might be hard to integrate **restraint** into the larger context of military strategy. A close look at the crises that erupted and were successfully managed between the nuclear-armed neighbors, though, may offer some insights about the dynamics of escalation control between India and Pakistan.

#### That’s the only thing that causes nuke winter

Stuart **Arsmtrong 12**, James Martin Research Fellow, Future of Humanity Institute, University of Oxford, 3/16/12, “Old threats never die, they fade away from our minds: nuclear winter,” http://blog.practicalethics.ox.ac.uk/2012/03/old-threats-never-die-they-fade-away-from-our-minds-nuclear-winter/

In 1983, scientists published a paper on nuclear winter. This boosted the death toll of all-out nuclear war from ‘only’ 200-500 million to the **very real possibility of the complete extinction of the human race**\*. But some argued the report was alarmist, and there did seem to be some issues with the assumptions. So – a military phenomena that might cause megadeaths, possibly true but requiring further study, and a huge research defense budget that could be used to look into this critical phenomena and that was already spending millions on all aspects of nuclear weapons – can you guess what happened next? Correct – the issue was ignored for decades. For over twenty years, there were but a tiny handful of papers on the most likely way we could end our own existence, and a vague and persistent sense that nuclear winter had been ‘disproved’. But in 2007, we finally had a proper followup - with the help of modern computers, better models and better observations, what can we now say? Well, that nuclear winter is still a major threat; the **initial fear was right**. Their most likely scenario was: A global average surface cooling of **–7°C to –8°C persists for years**, and after a decade the cooling is still –4°C [...]. Considering that the global average cooling at the depth of the last ice age 18,000 yr ago was about –5°C, this would be a climate change **unprecedented in speed and amplitude in the history of the human race**. The temperature changes are largest over land [...] Cooling of more than –20°C occurs over large areas of North America and of more than –30°C over much of Eurasia, including all agricultural regions. Also, precipitation would be cut in half and we’d lose most of the ozone layer. But there was a more worrying development: it also seems that a small-scale nuclear war could generate its own mini nuclear winter. It’s important to understand that nuclear winter would not be a direct consequences of the nuclear explosions, **but of the burning of our cities** in the wake of the war (given enough heat, even roads and pavements will burn), generating clouds of very black smoke that rise into the stratosphere. The clouds do need to reach these heights: any lower and they’ll get rained out. This is what happened during the burning of the Kuwaiti oil wells in 1991: Carl Sagan, one of the fathers of the theory, predicted a nuclear winter-like scenario. But he wasn’t paying attention to the climate models: as they predicted, the local damage was severe, but the smoke didn’t reach the stratosphere, and global damage was avoided

### 2NC --- Counterforce

#### Counterforce is effective---India has a ton of new tech from the world powers---new attack aircraft, better targeting and surveillance systems, and supersonic cruise missiles---each make Pakistan’s nuclear assets useless---that’s Leah

#### AND no impact because of Indian BMD---that’s Keck

#### AND the Agni-V missile is a game-changer and certainly gives them CF capability

Navneet **Bhushan 16**, defense research expert at Craffiti, holds a Post Graduate Diploma in IPR Law (NLSIU, Bangalore), Diploma Patent Information (The Netherlands), M.Tech (Computer Science & Engg) IIT Madras, M.Sc (Software Science) Allahabad University B.Sc (Hons.) Physics (Delhi University), "The Importance Of Agni-V to India’s Security", Simply Decoded, http://www.simplydecoded.com/2016/02/10/the-importance-of-agni-v-to-indias-security/

The fourth Agni-V test is scheduled to be conducted during the month of February 2016. This will be the second canister launch. Agni-V will be ready for induction after few more tests – especially the test of its multiple independent targeting re-entry vehicles (**MIRV**) **capability**. Although its induction and deployment is some years ahead, it has already produced interesting reactions. The key discussion has been about its range – whether it is 5000 km or 8000 km and above, and whether it should be truly called an ICBM. There has also been some buzz about the multiple independent targeting re-entry vehicles (MIRV) capability and their ability to carry 3-10 different warheads in a single missile. Indeed, it is a **major feature** and **technology** that will **catapult India** to a **very small set of nations with this capability**. The ability to carry 1-1.5 tons warhead over 5,000+ kilometers range is **definitely another feature** of the missile that puts it in a **different category** than whatever missiles India has. A 500 Kg payload can give the earlier missiles ability to carry nuclear warheads with 20KT yield, or something similar to what was exploded above Hiroshima and Nagasaki. With three times the payload, India now has the capability, in theory, at least, to carry **higher yield**, say 150KT to 1 MT yield nuclear warheads to distances **more than 5000 km away**. **This gives India a real counterforce capability if our doctrine and strategy warrants that option**. Counter-Force versus Counter-Value nuclear strategies If a country has the capability to strike population centers of the adversary with nuclear weapons, it is considered to have counter value capability in nuclear strategy terminology. These targets include population centers including big cities, large industrial complexes, power centers, dams, oil refineries etc. The counter value targets typically are “non-military targets” of the adversary, mostly population centers. As these are mostly larger spread and “soft” targets, the lower yield nuclear weapons, say with a yield of 20 Kilo Tons (KT) of TNT or so, are considered sufficient to pronounce this capability. Further, for counter value nuclear forces, one need a delivery weapon – can be a ballistic missile – which need not have a very high accuracy. One can understand, that if a nuclear bomb explodes above the center of the city or few kilometers away, the devastation of the city will be immense, and in the long term there will not be much qualitative difference in terms of impact on the city – say killing 1 million people immediately or 500,000 people immediately – which one will you take? The obvious answer is none. The counter value nuclear forces are giving this message to the adversary – we will take a couple of your cities – whether our missile takes 1 million or 0.5 million people of your city is not important – we can destroy a couple of your main cities if you attack or threaten us with a nuclear weapons strike. The counter value nuclear weapons are the forces to deter the adversary. These are indeed deterrence forces. On the other hand, counter force nuclear forces are meant to destroy adversary’s nuclear delivery capability. The counter force nuclear weapons need to deliver high KT or even Mega Ton (MT) of TNT equivalent nuclear yield to the enemy nuclear weapons housed inside the hardened, underground, nuclear shielded sites. Besides, high yield and very high accuracy (typically a Circular Error Probability of 0.01% of the range), the nuclear explosion has to be a surface burst rather than an air burst as in the case of counter value weapons. The surface burst will create large ground craters and take the earth along with adversary’s missiles in the protected silos – to the atmosphere – thereby destroying enemy’s nuclear missiles and also creating the dreaded nuclear fallout and radioactive rains that may continue for many months in future. These are truly horrendous nuclear weapons – not only in the capabilities but also the intentions of their possessors. India’s Nuclear Doctrine and Mutual Assured Destruction (MAD) India conducted its first peaceful nuclear test in 1974. In 1998, India was forced to conduct nuclear tests so that Pakistan could come out as an overt nuclear weapons state. India should be given due credit for speaking the language of a nuclear weapons free world and acting on it till 1998. Only because one-sided treaties such as NPT, CTBT, and FMCT, were coming to force, India conducted its nuclear tests. Also, within a couple of years, it published its draft nuclear doctrine, which clearly termed the policy of No First Use (NFU) of nuclear weapons. This is a very consistent communication and definitely a responsible behavior, that none can dispute. With the NFU doctrine, India does not need counterforce capabilities. This is true, against any adversary or potential adversary. The counterforce nuclear weapons developed during the cold war period into what in the nuclear parlance is called the Mutually Assured Destruction (MAD) doctrine. It is clear that MAD is the doctrine of a country that will take the nuclear attack as the first option in the escalatory spiral of any conflict. However, India has very clearly stated it is not following the MAD line and is therefore not developing any first strike capability against any adversary at any range. However, given the proliferation of nuclear weapons around the world and pressure by the world powers that are increasingly developing more and more powers, India needs to develop a second strike capability, that remains potent after a first strike by the adversary and is capable of delivering counter value punches at any range across the world. Why ‘at any range’? The world is definitely becoming **multi-polar** and also the threat of force as a **coercive influence** to shape the future is pursued by different power centers in multiple ways. Further, a nation in the globalizing world has to identify its national interests and safeguard these globally. Hence, India needs a potent second-strike ICBM-range capability for counter value nuclear strikes as a deterrence to any potential adversary that may have designs to either threaten or actually think about taking out Indian nuclear missiles in the first strike. It is in this context that Agni-V MIRV ICBM should be viewed and considered. Agni-V can be a second strike **counter force capability** – **A game changer** Agni-V with its **higher payload** and **MIRV capability** – with **high accuracies** – **does** give India a counterforce capability. This is definitely a **higher order message to potential adversaries**. With Agni-V, India says to the world that although we stick to a no first use policy **we now have a counter-force capability to strike at the nuclear strike forces of the adversary**. Also, with MIRVs **even if one Agni-V** survives a first strike by the enemy and reaches the adversary’s capital city it **will unleash complete devastation**. This should make an adversary see the futility of striking against India.

#### Official statements prove India can effectively end Pakistan’s deterrent via targeted airstrikes---locations are known

Uday Singh **Rana 17**, international politics @ CNN News 18, citing IAF Chief Birender Singh Dhanoa and Air Vice Marshall (Retd) Manmohan Bahadur, "How India Can Go After Pakistan's Nuclear Stockpile", https://www.news18.com/news/india/how-india-can-go-after-pakistans-nuclear-stockpile-1539223.html

New Delhi: Indian Air Force (IAF) Chief Birender Singh Dhanoa on Thursday said “if the need arises”, **the IAF had the capability to disarm Pakistan’s nuclear arsenal** by conducting what he called a “**full-spectrum” operation**. But when would such a “need” arise? What situation would cause India to strike back and how does India’s ‘no-first-use’ doctrine affect such an operation? News18 tries to answer some of these questions. Addressing a press conference on the eve of Air Force Day, Dhanoa said, “Air Force has the capability to **locate**, **fix** and **strike** across the border.... We are ready to take on any challenge." Dhanoa’s statement came in response to questions on Pakistan’s claim of possessing short-range nuclear weapons to counter the “cold start doctrine adopted by the Indian Army”. According to reports, Pakistan has stored its nuclear stockpiles in at least **six different locations**. These are reportedly in **Akro** (Sindh), **Gujranwala** (Punjab), **Khuzdar** (Balochistan), **Pano Aqil** (Sindh), and **Sargodha** (Punjab). Except for the base in Khuzdar, all bases are in provinces that share a border with India. A report by US-based experts Hans M Kristensen and Robert S Norris released last year estimated that Pakistan had anywhere between 130-140 nuclear weapons, as opposed to India’s estimated stockpile of 110-120 weapons. The report also suggested that Pakistan had modified its F16 fighter jets, of which it reportedly has 76, to carry nuclear weapons. Unlike Pakistan, India has a ‘no-first-use’ policy on nuclear warfare. This means that India has vowed never to be the aggressor in a nuclear war but will retaliate with full force if weapons of mass destruction were used against it. So does that mean India does not necessarily need nuclear weapons to destroy Pakistan’s stockpile? Air Vice Marshall (Retd) Manmohan Bahadur said, “Obviously, you can’t go full-Rambo and pull out their nuclear weapons through a non-nuclear operation. I think what the Chief meant when he made those comments was that India was **tracking Pakistan’s stockpile** and would **continue to do so in both peace times and war times**. No country in the world, not even the US, has the capability to perform what is called a ‘Splendid Nuclear Strike’ – a strike that would entirely obliterate a country. But we can **easily** destroy the Pakistani arsenal if we are able to track it effectively.” So how does the no-first-use policy affect India’s response? According to Bahadur, “Pakistan has coined a term called Tactical Nuclear Weapons (TWNs), which it claims it can use for strategic advantage in war. This term is absolute sense. There is no such thing as a ‘tactical or regular nuclear weapon. A nuke is a nuke. The correct term for these TNWs would be battlefield ballistic missiles. The only difference is in yield. The bomb dropped on Hiroshima was 20 Kiloton while this one will be much lighter. Naturally, the blast radius would also be limited to the battlefield” A “TNW” or Battlefield Ballistic Missile is meant to be used not on civilian targets but on military targets. Pakistan, Bahadur said, plans to use these low-yield missiles on Indian troops if India were to cross a so-called “Red Line”. He added, “When they say Red Line, they probably mean a scenario in which Indian troops manage to enter Pakistani territory or are close to breaking up Pakistan like we did in 1971. Of course, India has made it clear that a so-called TNW is a nuclear weapon and it would make Pakistan a nuclear aggressor. If such a situation ever arises, India would then be free to retaliate with full force and obliterate the Pakistani stockpiles.” While Pakistan is now modifying its F16s to carry nuclear weapons and, if reports are to be believed, it has a marginally larger stockpile than India; **it is at a disadvantage** when it comes to **nuclear weapon delivery.** Pakistan relies heavily on surface-to-surface missiles and even though it may have nuclear capable F16s, the size of the Pakistan Air Force (PAF) fleet is less than half that of the IAF. PAF reportedly has around 800 active fighter aircraft in total while **the IAF has over 1,700**. Pakistan Navy does **not** have any known nuclear capable submarines. “They (Pakistan) are also trying to modify some of their ships to carry nuclear weapons. However, **ships will be very ineffective when it comes to stealth missions.** We will **easily** be able to **detect their ships** through our satellites,” Bahadaur said. India, on the other hand, **can deliver nuclear weapons through air, surface and submarines**. The IAF would become very critical in such a scenario. IAF has three different aircraft - Sukhois, Mirages and Jaguars – **that have the capability to carry nukes.** These aircraft make up around 425 fighter jets in the IAF, although it is unclear how many can carry a nuclear payload. Bahadur said, “Because of our no-first-use policy, we are not on 24X7 trigger alert. However, in the event of a nuclear confrontation, India would have ample warning signs. A nuclear buildup will take time before the threat is immediate. But once we have activated our nukes, it would be a matter of minutes before our missiles reach any point in Pakistan.”

#### New tech answers all their warrants!

Kunal **Singh 19**, former researcher at the Center for Policy Research, citing an upcoming report by Christopher Clary and Ankit Panda, "Why is India’s no first use policy under so much strain?", https://www.hindustantimes.com/analysis/why-is-india-s-no-first-use-policy-under-so-much-strain/story-tbjRJj1fXb9UzDZCbymu6I.html

Second, India’s conventional advantage has been blunted by Pakistan through a clever use of sub-conventional assets (read terrorists) and threat of using tactical nuclear weapons against any Indian conventional response to a 26/11 type of an attack. India’s nuclear doctrine, that professes massive retaliation even against use of midget nukes, does not help. **Pre-emptive counterforce (CF) strikes**, if they can be executed, seem to be a way out of this problem. **Nagal** has **openly advocated** this strategy and Shivshankar **Menon**, the former national security advisor, has indicated **openness to the idea.** Third, India today has access to **much better technology than it had in 2003** when it released its nuclear doctrine. In their forthcoming paper, “India’s Counterforce Temptations”, two US-based scholars, Christopher Clary and Vipin Narang, **list out the technologies that enable a CF posture for India**. New Delhi now has **more missiles** and **more accurate ones**. It has high **quality surveillance platforms**. It can access commercially available **remote sensing technologies**. It is developing **MIRVs** (multiple independently targetable re-entry vehicles) and investing in **missile and air defence systems**. While most of these developments may be relevant for China, **they also make India more capable than ever before of executing CF strikes against Pakistan**. However, it should be noted at this point that India is still a long way away from possessing the capability of executing successful CF strikes. And it may never reach there because Pakistan is rapidly increasing its arsenal size and improving the survivability of its nuclear weapons. India’s solid fuel missiles have enabled it to move towards **canisterised systems** for storing its land-based ballistic missiles. Such systems can reduce turnaround times — earlier India used to rely on physical separation of components to prevent unauthorised use — **and hence are suitable even for pre-emptive strikes in case the rival is shown to be readying its nuclear assets for use.** Canisterisation has further enabled India’s nuclear deterrent to move to the seas. With INS Arihant, a nuclear propelled ballistic missile submarine (SSBN), India has a credible sea-based deterrent. With a couple of more SSBNs, it can boast of a genuine nuclear triad. But SSBNs involve pre-mating of warheads with ballistic missiles, and hence increase the strain on command and control, especially with the NFU policy intact. Both canisterisation and sea-based deterrence thus increase the strain on NFU policy.

#### This has been true for decades---if other countries can do it, India can too---they have all our tech

Eric **Arnett 98**, Stockholm International Peace Research Institute, “Nuclear Weapons and Arms Control in South Asia after the Test Ban”, https://www.sipri.org/publications/1998/nuclear-weapons-and-arms-control-south-asia-after-test-ban

Arms suppliers have furnished India with the technology that could **make a counterforce attack against Pakistan's air bases successful**, creating a much greater incentive for Pakistan to deploy nuclear armed ballistic missiles and perhaps more nuclear warheads and the materials of which they are made. Despite the common perception that India does not receive much Western military support, **almost every major arms exporter** has provided **counterforce or strategic defence technology** to India, including **France**, **Israel**, **Italy**, **Russia**, **Sweden**, **the UK**, and the **USA**.

### 2NC --- India Strikes First

#### India counterforce strikes Pakistan at the first sign of hostilities---its documented in official Indian policy AND was ascertained from remarks from the commander of their India’s strategic forces and their former head national security adviser---that’s Narang

#### Prefer Narang---he’s an Indian nuclear policy expert, a political science professor at MIT, and he’s carefully analyzing the rhetoric of Menon, who was the person in charge of India’s nuclear weapons and posture

Vipin **Narang 17**, Political Science Professor @ MIT, “SOUTH ASIA’S EVOLVING STRATEGIC DOCTRINES”, https://www.stimson.org/sites/default/files/file-attachments/Strategic%20Doctrines%20-%20Event%20Transcript.pdf

The substantive point of my remarks at the Carnegie conference were that there was authoritative thinking by a former **national security advisor**, Shivshankar **Menon**, on consideration about India moving towards **counterforce targeting**. It was long presumed that India had countervalue targeting strategy, credible minimum deterrence, large strategic weapons it would use in retaliation. But there were tantalizing hints in his Brookings 2016 book, called Choices, that were kind of consistent with some of the technological developments that we've been seeing that India **might not be content with countervalue retaliation** as its only targeting strategy. And It may think about shifting to, or including in its menu of options, counterforce targeting strategies. So, what I'm going to do today is talk about the strategic logic for why India might be thinking about this. The evolution of the strategic dynamic between India and Pakistan and why, when Menon was national security advisor, there may have been incentives to think about creating counterforce options to disarm Pakistan's strategic nuclear weapons force. Then I'll present the evidence with significant caveats that this is Menon's thinking. We can talk about whether it's persisted, whether we think it's persisted, what other indicators we have. The **take-home point** is that **you can't ignore that a former national security advisor** has **written this**. India **does not** talk about its nuclear doctrine very often. There's only one public nuclear doctrine from 2003, which is now almost 15 years old. **When you see authoritative thinking and writing by a national security advisor, the point person in the Indian system managing nuclear strategy, it's important.** So, we **can't** discount what he writes, or what he may suggest is a debate that was ongoing when at least he was national security advisor. The important piece initially is the strategic logic for why India might be thinking about counterforce options. So, I'll start with some basic theory, the nuclear revolution. The nuclear revolution is very simple in some ways, easily stated as mutually accepted nuclear vulnerability, at least to high levels of high levels of strategic stability. That's a very specific condition. You have to have secure second-strike forces. Both sides have to accept mutual vulnerability and at that point in a nuclear dyad in which mutually accepted nuclear vulnerability exists, nuclear use is suicidal. So, you get high levels of strategic stability. All this means, according to the nuclear revolution, is that you will not have strategic nuclear exchange. The core assumptions of the nuclear revolution are two-fold. The first is that mutual vulnerability is impossible to escape. Once you achieve this condition of secure second-strike forces, high levels of survivability, it is too costly to escape it. The New York Times article today and Long and Green's work suggests that there's this belief that it was just too costly to threaten the survivability of Soviet or American strategic nuclear forces, particularly once they went to sea, because the offensive advantage—decoys, chief survivability measures—are more cost effective than threatening survivability. So, threatening survivability is harder than ensuring survivability. That's the core assumption, one of the core assumptions of the nuclear revolution. The second one, which is related, especially to South Asia now, is the so-called stability/instability paradox. The states are willing to trade high levels of stability for low levels of instability. So, it says, okay, “We're going to have high levels of strategic nuclear stability, but that frees us up again to have low-level conflict, full-scale war.” Glen Snyder and his formulation of the stability/instability paradox talked about even tactical nuclear use. You could have tactical nuclear use and that would be a war-terminating event because strategic nuclear exchange was still suicidal under a condition of mutually assured destruction. There are a couple of things, however, and Michael can talk about the Cold War dynamic and related to what Sameer was talking about with the US and Soviet, and both trying to escape this condition. This condition basically says you can only have countervalue targeting strategies, anything short of that is a waste of money. And why would you threaten this high-level stability? Well, it turns out the US and Soviet Union were both kind of interested in escaping this condition so they could win a war, including a nuclear war. But now, increasingly, in the case of India, at least, is it possible to escape mutual vulnerability? Threatening survivability may not be so expensive. ISR is becoming cheaper. Pakistan has only tens of strategic nuclear forces, not tens of thousands. So, the problem is not as hard as the Soviet Union. The bigger incentive I think for the Indian case is this question about **how much instability are you willing to tolerate?** The United States did not have to accept terrorism in its metropoles believed to be sponsored by the adversary. The lowlevel instability that the Cold War was concerned about was in Germany. **India is being attacked in its metropoles** by terrorists it believes are being sponsored by, or funded by, and coming from Pakistan. **At some point, that becomes untenable**. **How much revisionism are you willing to accept?** How much **instability** are you willing to accept? The second thing is the **rise of the future**. Again, something that the US really didn't have to concern itself with, although some Sovietologists did. Who's going to control the nuclear forces in Pakistan in the **future?** Right now, it's under army control, but in the future maybe there's domestic political instability and the future control of Pakistan's nuclear weapons is... may worry that it falls **into extremist hands**. You may have to have this arrow in your quiver to **disarm the strategic nuclear weapons** because of both of **these conditions**. You may not know who controls their weapons in the future and how much instability are you willing to accept before you start saying, "**Enough is enough**" and this umbrella under which India believes Pakistan is aggressing needs to be removed. Long and Green talk about United States and Michael will probably talk about this more in the future. So, we always thought the US was just the outlier, and extended deterrence is a big piece of that. We can talk about that later. I'm going to present some of Menon's thinking about counterforce would suggest that well, why would India be concerned about this? Why would India be incentivized to do this? The Indian belief over the past 20 years is that Pakistan uses nuclear weapons as a shield behind which to aggress. India has played around with different options. I'll walk through them, **but, at some point, after suffering a Bombay 2008 and concerns about future control of nuclear weapons, you may have to remove the shield.** This incentive has been growing, I argue, over the last 20 years, to at least **think about this as a potential option**. I think that's kind of where we are, right so the mechanism is not the US case, which was extended deterrence driving counterforce or the American way of war in order to make extended deterrence credible, you might have to think about counterforce options. But the Indian case it's about revisionism from your adversary at very low, but provocative, levels in your homeland and the shadow of the future. Who might control the nuclear forces? Everybody knows the basic strategic problem. India had conventional superiority, its mainstay conventional strategy was a strike corps concept. Pakistan's development of nuclear weapons basically neutralized the large strike-corps concept, 800,000 forces penetrating the plains and desert sectors of Pakistan. The first, after Kargil, the first major provocation was the 2001 parliament attack. We forget how provocative that may have been to Delhi because, at the time, we had just suffered 9/11, we were gearing up for the war in Afghanistan, the United States was courting Pakistan again to prosecute that war. On December 13th, you had a group of militants believed to be from the Jaish-e-Mohammed sponsored and funneled from Pakistan, attacking parliament, which looks like a potential decapitation strike on the BJP. I mean this is a pretty provocative. Imagine if a similar tactic were perpetrated on Capitol Hill. This led to Operation Parakram, those who follow South Asia will be familiar with the ten-month military mobilization. Michael Krepon and Polly Nayak have written, I think, the best brief on the Twin Peaks Crisis, which is available on the web. It goes through just how severe a crisis this was. The lesson for India, after mobilizing the three strike crops during Parakram was they didn't do it fast enough. The army took too long to mobilize and lost the window to retaliate conventionally against Pakistan. That's the lesson that the army drew and, in some ways, that's not really far off the mark because it took about a month for all three strike corps to deploy before the Indian Army was ready to prosecute its conventional option. That led to this idea of Cold Start, which was debated in the think tanks. We can debate ad nauseam as to whether the Indian Army ever adopted more aggressive versions of Cold Start. The think-tank concept that took hold in the media and in Pakistani imagination was this idea of breaking up the corps into ten so-called IBGs, integrated battle groups, to conduct shallow penetrations across the border. It would be a shorter intense conflict, the idea for the Indians would be to grab some territories as a bargaining chip to dismantle terrorist organizations. Some bargaining-chip idea, and you would have to at some point attrite the Pakistan Army in order to achieve these objectives. This concept was never really adopted. India still has the strike-corps concept, even though it's reoriented its mobilization procedure, the holding corps have become pivot corps. We can talk about what configuration may or may not exist now. The more extreme version of Cold Start that was propagated seems to not have been adopted by the Indians. This came on the heels of Parakram. So, around 2004 is when the myth of Cold Start is born. That gives genesis to Pakistan's tactical nuclear weapons development. So, the Nasr and other cruise missiles, which are shorter range. Cold Start gave grist to the mill here to develop these tactical nuclear weapons to defeat Cold Start. What's the Pakistani line? That Cold Start will end in hot war. This is repeated in ISPR releases all the time. So, full-spectrum deterrence takes hold after the development of Cold Start. The idea is tactical nuclear weapons on Indian forces, as they cross into Pakistani territory. The Pakistan Army will stand and fight for a while, it may not be first resort, but it won't be last resort. Tactical nuclear weapons are used to defeat India's conventional attack. The strategic nuclear weapons, the long-range nuclear forces, are used to deter Indian nuclear retaliation. India's doctrine is no first use and credible minimum deterrence, and that worked when Pakistan only had strategic nuclear forces. You could threaten massive retaliation when they had limited strategic nuclear forces. You could say any use of strategic nuclear weapons would result in massive strategic nuclear retaliation. The problem became with the development of tactical nuclear weapons was a threat of retaliating with seven strategic nuclear weapons against seven Pakistani cities—in the event where they used a single tactical nuclear weapon on Indian forces who were operating on Pakistani soil— was not credible. So, Pakistan develops this idea of full-spectrum deterrence. The idea is to use strategic nuclear forces to the deter the Indian strategic nuclear retaliatory attack. That makes the use of tactical nuclear weapons a war-winning strategy. So, we all knew the cycle, right? Terrorist attack, believed to be sponsored by Pakistan. India retaliates with some version of Cold Start. Pakistan uses tactical nuclear weapons on Indian forces on Pakistani soil. India does not have the justification for retaliating with strategic nuclear forces. Then comes the Bombay attack in 2008. This really surfaced the dilemma. By 2008, India was supposed to have Cold Start intact. You were supposed to have a credible, conventional, retaliatory option. This was an outrage that was worse than the parliament attacks. 173 people killed, British citizens, American citizens, Israelis, Indians. So, the dilemma is how do you escape the paralysis induced by Pakistan's tactical nuclear weapons following a mass-casualty provocation? After Bombay, it was clear that there was really no credible ground retaliatory option to strike back with. Toby Dalton and George Perkovich at Carnegie have written Not War Not Peace, a great book, which goes through why there are other options, but it takes inner service coordination to develop them. India's always focused on the ground options. The ground option, though, wasn't available. If your solution to Pakistan's tactical nuclear weapons was trying to operate **below the threshold**, say okay we're going to develop a Cold Start-like strategy, so we don't cross Pakistan's nuclear threshold. After the Bombay attacks, you have this problem, **how do you ensure that Indian forces stay below the threshold?** How do you ensure that you know **if Pakistan devolves tactical nuclear weapons** in a **crisis**, that one **brigadier** or major **general** that has control of the system doesn't **use it?** How many thresholds do you have to calibrate against? How do you stop your forces from getting drunk on success if you get going? This idea of Cold Start was frozen after the Bombay attacks and thereafter. The conventional option is still going to be worked on, I imagine. It also meant thinking about potential adjustments to nuclear strategy. So, I'll very quickly walk through the evidence that I presented earlier. We'll start with the holy doctrine. The 2003 official release of the doctrine is only eight bullet points. A draft nuclear doctrine in 1999 is a long and meandering, and at times inconsistent, and was probably never intended to be released publicly. The only official release is the 2003 doctrine. There are three core pillars of the official doctrine. Credible minimum deterrence, pillar number one. Pillar number two is no first use, although it is caveated already by bullet point six when India leaves open the possibility for retaliating with nuclear weapons against chemical or biological use. And then the third pillar is the idea of massive nuclear retaliation. So, this is the doctrine. So, we don't have official any official updates to the doctrine since 2003. And there's very little writing by authoritative figures about the doctrine. You have some SFC commanders that write after they leave, like Admiral Vijay Shankar, General BS Nagal, **but in the Indian system**, the **point person** is the **national security advisor**. **The coordinator for all nuclear strategy forces and posture is the national security advisor**. Brajesh Mishra was very powerful, was responsible for the release of the doctrine itself, and the standing up the Strategic Force Command (SFC). Then you had several national security advisors along the way who manage the force and then enters **Shivshankar Menon in the early 2010s**. Who says that massive retaliation has to be countervalue? The doctrine doesn't say that. In response to this dilemma about having limited conventional options, or unattractive conventional options, after a Pakistani terrorist attack, Menon writes, "If Pakistan were to use tactical nuclear weapons against India, even against Indian forces in Pakistan, it would effectively be opening the door to a **massive Indian first strike**, having crossed India's declared red lines. There would be little incentive once Pakistan had taken hostilities to the nuclear level, for India to limit its response, since that would only invite further escalation by Pakistan. India would partly risk giving Pakistan the chance to carry out a massive nuclear strike after the Indian response to Pakistan using tactical nuclear weapons." That sentence is **really important**. He lays out the logic for not allowing Pakistan to use its long-range strategic force if India were to retaliate with either proportional retaliation or strategic nuclear retaliation. "In other words, Pakistani tactical nuclear weapon use would effectively free India to undertake a comprehensive first strike against Pakistan." Now in nuclear jargon, for those of us who've been studying nuclear weapons for a long time, **“comprehensive first strike” is an alarm bell.** It has a **very specific meaning**. It means **strategic nuclear counterforce**. So, one of the criticisms I got after the Carnegie conference was, “Oh, Menon didn't know what ‘comprehensive first strike’ meant. **But he’s a pretty sophisticated national security advisor, he's a foreign ambassador to China, he's been studying this stuff for a long time**. And even if you think that, the sentence before it is really important, because he's basically laying out the logic: **we would not risk giving Pakistan the chance to carry out a massive nuclear strike** after the Indian response to Pakistan using tactical nuclear weapons. He's talking about **disarming the strategic nuclear force**. From the Joint Doctrine of the Indian Armed Forces 2017, we know that the **responsiveness** of the force has increased over the past several years. One interesting tidbit is the SFC controls all of India's nuclear warheads. Now this could be sloppy because the SFC itself may still be comprised of civilian agencies. It's unclear whether the joint doctrine here is saying something new or is kind of folding it in, but the bigger thing for me was this is the first official doctrine that I know of that dropped “credible minimum deterrence” and the joint doctrine itself refers to maintaining just a credible deterrence. This was a sloppy doctrine in a lot of ways. A lot of typos, even in the publicly released version. But given all the kerfuffle over all this, dropping one of the pillars of the official doctrine in another official release, instead of going from credible minimum deterrence to credible deterrence has some significance—if they meant it. But I'll leave that one aside. The other piece of this—which is what I think a lot of the Indian media focused on—was, well, if you think about counterforce, you **really have to think about preemption**. You **can't afford to go second** with **counterforce doctrines**. You can't afford to have any of your forces attrited because you're accounting and how many forces you allocate to your adversary’s forces are **very precise**. What Menon says about preemption is interesting. **There's no need to have this language or paragraph in his book if there actually wasn't a gray area**. He says, "There is potential gray area when India would use nuclear weapons first against another nuclear weapons state. Circumstances are **conceivable** in which India might find it **useful to strike first**, for instance, against a nuclear weapons state that had declared it would certainly use its weapons and if India were certain that adversary's launch was imminent. But India's present public nuclear doctrine is silent on this scenario." There are two things I want to highlight here. First, this classic defensive preemption. If you think your adversary is going to go imminently, international law carves out exceptions for preemption, you could say this is defensive. The other interesting line is the last sentence. "But India's present public nuclear doctrine is silent on this scenario." Now, India has done some internal reviews. Does this suggest that the private or classified version of the doctrine says something about preemption? **There's no reason to have this in there otherwise.** Why even flag this, the phrase "present public nuclear doctrine," if there wasn't some debate or thinking about carving out an exception and making nuclear-weapons use preemptively against an imminent use consistent with no first use? This is basically the debate that China had about whether preemption would still be consistent with no first use. We saw this thinking on preemption emerging for a while. Parrikar, the sitting defense minister at the time, brings it up. He talks about how no first use is not… you know, no book is going to constrain me when nation security is at stake, and I don't believe we should have no first use, but, no, doctrine hasn’t changed. He was very clear to say that be he personally didn't believe it. Well this is sitting defense minister. Without a clarification, all that is doing is injecting ambiguity into how flexible you think no first use is. Whether you can make preemption consistent with no first use, which is what Nagal tried to do in one of his earlier writings. Why would you have to think about this, though, if countervalue targeting is your mainstay strategy? Because countervalue targeting doesn't require preemption. You can have a relaxed posture. The only reason to think about it is if you think about counterforce. The way Menon pieces these writings together in a chapter, which is labeled “Why India Has a No-First-Use Doctrine.” If you read the chapter, it becomes clear to me at least, my interpretation, feel free to disagree, it is not a fulsome defense of NFU as a sacrosanct policy. He says it needs to be reviewed. Is it in India's security interest? He goes through the history and says look we have it because we have it, but you know it's something that’s not fixed in stone. It needs to be continuously revisited to see if it's in India's security interest. When he has the language about the gray area and then he talks about counterforce, the only condition under which you'd have to think about preemption, then this all starts adding up into **thinking about flexibility of the doctrine**. The only public statement that Menon gave after what I call Counterforce Gate, is that India's doctrine has **far greater flexibility than it gets credit for**. **He's not denying that he was talking about counterforce**. The two pieces are, is preemption consistent with no first use, maybe. There are arguments that you can make that it's defensive and use against imminent use is retaliatory first use. Nothing in the doctrine says that targeting has massive retaliation has to be countervalue. **This would be a massive use of nuclear weapons when you're talking about counterforce.**

#### If a conflict happens, India will go first---experts agree

Alicia **Sanders-Zakre 17**, Research Assistant at the Arms Control Association, “Is India Shifting Nuclear Doctrine?”, https://www.armscontrol.org/act/2017-05/news/india-shifting-nuclear-doctrine

Comments from former Indian officials, including former Strategic Forces Commander Lt. Gen. B.S. **Nagal**, former Defense Minister Manohar **Parrikar**, and retired National Security Adviser Shivshankar **Menon**, have led some experts to conclude that **India would consider nuclear first use in a third circumstance**, as a **pre-emptive counterforce attack** if India has **reason to believe** that Pakistan is preparing a first strike against it. India’s doctrine may have the flexibility to allow for **pre-emptive counterforce strikes** designed to **neutralize Pakistan’s nuclear arsenal** before Islamabad could retaliate, some experts think based on remarks from Menon and Nagal. Vipin Narang, a professor at the Massachusetts Institute of Technology, ignited the debate at the Carnegie Endowment’s International Nuclear Policy Conference in Washington on March 20 when he stated that **India**, **not Pakistan**, may be the first to launch nuclear weapons in the event of a South Asian conflict. He highlighted elements of Menon’s 2016 book, Choices: Inside the Making of India’s Foreign Policy, which identified the rationale for India shifting away from countervalue targeting, such as cities, **to counterforce targeting**, such as military assets, based in part on Pakistan’s **development of tactical nuclear weapons.** Narang argued that India’s no-first-use policy has “far greater flexibility” than generally recognized and that **India could strike first** if it considers a Pakistani strike to be imminent. This assessment is supported by **several well-known South Asian defense analysts**, including Ajai **Shukla**, a journalist and retired Indian army colonel. Shukla wrote in an April 10 article in The Business Standard, an Indian newspaper, that the traditional South Asian nuclear exchange scenario, in which India responds to a Pakistani first strike with a countervalue second strike targeting Pakistani cities **is not realistic**. **If India had reason to believe that Pakistan was preparing to launch a first strike, an Indian pre-emptive counterforce strike, targeting the Pakistani nuclear arsenal, would be more strategic**, he wrote.

Scenarios

### 2NC --- Afghanistan

#### Pakistan’s nukes are the shield they use to sustain terror sponsorship

**Economic Times 18**, “Pakistan may soon have world's third largest nuke stockpile”, https://economictimes.indiatimes.com/news/defence/pakistan-may-soon-have-worlds-third-largest-nuke-stockpile/articleshow/63906708.cms

Micallef mentions that since the late 1980s, Pakistan has used a variety of **militant organisations** as **proxies** in its ongoing struggle with India over Kashmir and elsewhere. He certifies that the Pakistan Army's Inter-Services Intelligence (**ISI**) **sponsors**, **organises**, **trains** and **funds** terror outfits operating from its soil such as the **Lashkar-e-Taiba**, **al-Qaida**, Lashkar-e-Omar, **Jaish-e-Mohammed**, Sipah-e-Sahaba, the Jammu Kashmir Liberation Front (JKLF), Jamaat-ud-Da'wah, Harkat-ud-Jihad al-Islami, **the Haqqani Network**, Jamaat-ud-Mujahideen Bangladesh (JMB) and the **Afghan Taliban**, and uses them as proxies for its covert military operations. According to Micallef, since 1990, Pakistan's military strategy has followed a three-fold approach **(1)** use militant proxy organizations to strike at Indian military positions in Kashmir **(2)** rely on the **threat to deploy nuclear weapons** should India try to retaliate with a **military invasion of Pakistan** and (3) rely on the U.S. and China, in particular, and world opinion in general, to **restrain** India from attacking Pakistan.

#### It’s reverse causal---killing the ISI is key to Afghan stability and the US winning the war

Howard **Kleinberg 12**, Research Analyst @ The George C. Marshall Institute, “To Win in Afghanistan, Destroy Pakistan's ISI”, American Intelligence Journal, Vol. 30, No. 2 (2012), pp. 120-124

**Warfare-strategy theory** holds that the **further up** the enemy's chain of command one aims, **the greater the effect on the enemy**. As noted theorist Sir Arthur Liddell-Hart points out, “In general, the nearer to the force that the communications cut is made, the more immediate the effect: the nearer to the base, the greater the effect. ... Thus... more success and more effect is to be expected from cutting his communications as far back as possible. A further consideration is that, while a stroke close in rear of the enemy force may have more effect on the minds of the enemy troops. a stroke far back tends to have more effect on the mind of the enemy commander.” In line with this theory, neither attacking nor negotiating with the Taliban/Haqqani networks will in and of itself achieve a lasting peace or victory in Afghanistan: this is ultimately, because **they are not acting alone**, nor are they even the masters of their own destiny. Rather, the true "brains" (and money, etc.) behind the insurgency in Afghanistan is not the Taliban or Haqqani themselves: **it is the Pakistani military** or, more specifically, **Pakistan's Inter-Security Intelligence agency**, or **ISI**. As "the premier intelligence agency of the State of Pakistan,"' the ISI is the eyes, ears, and nervous system linking the Pakistani military to **support** and **mastermind** these insurgent groups. Indeed, the Pakistani military, through the ISI, **intends to re-conquer and rule Afghanistan through its Taliban and Haqqani proxies**, just as it did in the 1990s, after the Soviets withdrew.' The ISI is helping the Taliban in the latter's quest to re-conquer and rule Afghanistan and has been doing so since at least as far back in time as the defeat of the Soviets and their withdrawal from Afghanistan. This is because the ISI sees the Taliban as a useful ally to counter India and, in order to influence and control Afghanistan via a powerful and compliant proxy, has used it as such, **in the past to terrible effect.** There is plenty of contemporary and recent evidence proving that the ISI is not merely complicit in the war against the U.S, and the International Security Assistance Force (ISAF) in Afghanistan, but more, i.e., that it is **masterminding the war against the U.S.** For instance, the ISI is widely held responsible for the "professional hit" assassination of the Taliban's **chief peace negotiator** in Afghanistan in May 2012. Furthermore, the "apparent" failure of the Pakistani army border liaison to alert ISAF forces of Pakistani army forces just inside the Pakistani border with Afghanistan makes the Pakistani Army (and with it, the ISI), and not the U.S., responsible for the loss of 28 Pakistani Army soldiers, **for which NATO has instead been wrongly burdened with the blame**. This incident provided the convenient (for the Pakistani army and ISI) excuse to raise domestic **outrage against the US** in order to **justify ousting US forces** and shutting down supply routes from Pakistan to Afghanistan in 2011.

#### Anything else kills NATO

Paul D. **Miller 12**, Paul D. Miller served as director for Afghanistan on the National Security Council staff under Presidents Bush and Obama. He is an assistant professor of International Security Affairs at the National Defense University and director for the Afghanistan-Pakistan program at the College of International Security Affairs, World Affairs Journal, “It’s Not Just Al-Qaeda: Stability in the Most Dangerous Region”, <http://www.worldaffairsjournal.org/article/it%E2%80%99s-not-just-al-qaeda-stability-most-dangerous-region>, March/April 2012

It was, of course, al-Qaeda’s attack on the US homeland that triggered the intervention in Afghanistan, but wars, once started, always involve broader considerations than those present at the firing of the first shot. The war in **Afghanistan now affects all of America’s interests across South Asia: Pakistan’s stability and the security of its nuclear weapons, NATO’s credibility, relations with Iran and Russia, transnational drug-trafficking networks, and more.** America leaves the job in Afghanistan unfinished at its peril. The chorus of voices in the Washington policy establishment calling for withdrawal is growing louder. In response to this pressure, President Obama has pledged to withdraw the surge of thirty thousand US troops by September 2012—faster than US military commanders have recommended—and fully transition leadership for the country’s security to the Afghans in 2013. These decisions mirror the anxieties of the electorate: fifty-six percent of Americans surveyed recently by the Pew Research Center said that the US should remove its troops as soon as possible. But it is not too late for Obama (who, after all, campaigned in 2008 on the importance of Afghanistan, portraying it as “the good war” in comparison to Iraq) to reformulate US strategy and goals in South Asia and explain to the American people and the world why an ongoing commitment to stabilizing Afghanistan and the region, however unpopular, is nonetheless necessary. The Afghanistan Study Group, a collection of scholars and former policymakers critical of the current intervention, argued in 2010 that al-Qaeda is no longer in Afghanistan and is unlikely to return, even if Afghanistan reverts to chaos or Taliban rule. It argued that three things would have to happen for al-Qaeda to reestablish a safe haven and threaten the United States: “1) the Taliban must seize control of a substantial portion of the country, 2) Al Qaeda must relocate there in strength, and 3) it must build facilities in this new ‘safe haven’ that will allow it to plan and train more effectively than it can today.” Because all three are unlikely to happen, the Study Group argued, al-Qaeda almost certainly will not reestablish a presence in Afghanistan in a way that threatens US security. In fact, none of those three steps are necessary for al-Qaeda to regain its safe haven and threaten America. The group could return to Afghanistan even if the Taliban do not take back control of the country. It could—and probably would—find safe haven there if Afghanistan relapsed into chaos or civil war. Militant groups, including al-Qaeda offshoots, have gravitated toward other failed states, like Somalia and Yemen, but Afghanistan remains especially tempting, given the network’s familiarity with the terrain and local connections. Nor does al-Qaeda, which was never numerically overwhelming, need to return to Afghanistan “in strength” to be a threat. Terrorist operations, including the attacks of 2001, are typically planned and carried out by very few people. Al-Qaeda’s resilience, therefore, means that stabilizing Afghanistan is, in fact, necessary even for the most basic US war aims. The international community should not withdraw until there is an Afghan government and Afghan security forces with the will and capacity to deny safe haven without international help. Setting aside the possibility of al-Qaeda’s reemergence, the United States has other important interests in the region as well—notably preventing the Taliban from gaining enough power to destabilize neighboring Pakistan, which, for all its recent defiance, is officially a longstanding American ally. (It signed two mutual defense treaties with the United States in the 1950s, and President Bush designated it a major non-NATO ally in 2004.) State failure in Pakistan brokered by the Taliban could mean regional chaos and a possible loss of control of its nuclear weapons. Preventing such a catastrophe is clearly a vital national interest of the United States and cannot be accomplished with a few drones. Alarmingly, Pakistan is edging toward civil war. A collection of militant Islamist groups, including al-Qaeda, Tehrik-e Taliban Pakistan (TTP), and Tehrik-e Nafaz-e Shariat-e Mohammadi (TNSM), among others, are fighting an insurgency that has escalated dramatically since 2007 across Khyber Pakhtunkhwa, the Federally Administered Tribal Areas, and Baluchistan. According to the Brookings Institution’s Pakistan Index, insurgents, militants, and terrorists now regularly launch more than one hundred and fifty attacks per month on Pakistani government, military, and infrastructure targets. In a so far feckless and ineffectual response, Pakistan has deployed nearly one hundred thousand regular army soldiers to its western provinces. At least three thousand soldiers have been killed in combat since 2007, as militants have been able to seize control of whole towns and districts. Tens of thousands of Pakistani civilians and militants—the distinction between them in these areas is not always clear—have been killed in daily terror and counterterror operations. **The two insurgencies in Afghanistan and Pakistan are linked. Defeating the Afghan Taliban would give the United States and Pakistan momentum in the fight against the Pakistani Taliban**. A Taliban takeover in Afghanistan, on the other hand, will give **new strength to the Pakistani insurgency**, which would gain an ally in Kabul, safe haven to train and arm and from which to launch attacks into Pakistan, and a huge morale boost in seeing their compatriots win power in a neighboring country. Pakistan’s collapse or fall to the Taliban is (at present) unlikely, but the implications of that scenario are so dire that they cannot be ignored. Even short of a collapse, increasing chaos and instability in Pakistan could give cover for terrorists to increase the intensity and scope of their operations, perhaps even to achieve the cherished goal of **stealing a nuclear weapon.** Although our war there has at times seemed remote, **Afghanistan itself occupies crucial geography**. Situated between Iran and Pakistan, bordering China, and within reach of Russia and India, **it sits on a crossroads of Asia’s great powers.** This is why it has, since the nineteenth century, been home to the so-called Great Game—in which the US should continue to be a player. Two other players, Russia and Iran, are aggressive powers seeking to establish hegemony over their neighbors. Iran is seeking to build nuclear weapons, has an elite military organization (the Quds Force) seeking to export its Islamic Revolution, and uses the terror group Hezbollah as a proxy to bully neighboring countries and threaten Israel. Russia under Vladimir **Putin is seeking to reestablish its sphere of influence** over its near abroad, in pursuit of which it (probably) cyber-attacked Estonia in 2007, invaded Georgia in 2008, and has continued efforts to subvert Ukraine. Iran owned much of Afghan territory centuries ago, and continues to share a similar language, culture, and religion with much of the country. It maintains extensive ties with the Taliban, Afghan warlords, and opposition politicians who might replace the corrupt but Western-oriented Karzai government. **Building a stable government** in Kabul **will** be a small step in the larger campaign to **limit Tehran’s influence**. Russia remains heavily involved in the Central Asian republics. It has worked to oust the United States from the air base at Manas, Kyrgyzstan. It remains interested in the huge energy reserves in Kazakhstan and Turkmenistan. Russia may be wary of significant involvement in Afghanistan proper, unwilling to repeat the Soviet Union’s epic blunder there. But **a US withdrawal** from Afghanistan followed by Kabul’s collapse **would** likely **embolden Russia to assert its influence more aggressively elsewhere in** Central **Asia or** Eastern **Europe,** especially in the Ukraine. **A US departure** from Afghanistan **will** also continue to **resonate for** years to come in the strength and purpose of NATO. Every American president since Harry Truman has affirmed the centrality of the Atlantic Alliance to US national security. The war in Afghanistan under the NATO-led International Security Assistance Force (ISAF), the Alliance’s first out-of-area operation in its sixty-year history, was going poorly until the US troop surge. Even with the limited success that followed, allies have complained that the burden in Afghanistan has been distributed unevenly. Some, like the British, Canadians, and Poles, are fighting a shooting war in Kandahar and Helmand, while others, like the Lithuanians and Germans, are doing peacekeeping in Ghor and Kunduz. The poor command and control—split between four regional centers—left decisionmaking slow and poorly coordinated for much of the war. ISAF’s strategy was only clarified in 2008 and 2009, when Generals David McKiernan and Stanley McChrystal finally developed a more coherent campaign plan with counterinsurgency-appropriate rules of engagement. **A bad end in Afghanistan could have dire consequences for the Atlantic Alliance**, leaving the organization’s future, and especially **its credibility as a deterrent to Russia, in question**. It would not be irrational for a Russian observer of the war in Afghanistan to conclude that if NATO cannot make tough decisions, field effective fighting forces, or distribute burdens evenly, it cannot defend Europe. The United States and Europe must prevent that outcome by salvaging a credible result to its operations in Afghanistan—one that both persuades Russia that NATO is still a fighting alliance and preserves the organization as a pillar of US national security.

#### Nuke war

Zbigniew **Brzezinski 9**, former U.S. National Security Adviser, “An Agenda for NATO,” Foreign Affairs, 88.5, Sept/Oct 2009, EBSCOHost

NATO's potential is not primarily military. Although NATO is a collective-security alliance, its actual military power comes predominantly from the United States, and that reality is not likely to change anytime soon. NATO's real power derives from the fact that it combines the United States' military capabilities and economic power with Europe's collective political and economic weight (and occasionally some limited European military forces). Together, that **combination makes NATO globally significant**. It must therefore remain sensitive to the importance of safeguarding the geopolitical bond between the United States and Europe as it addresses new tasks. The basic challenge that NATO now confronts is that there are historically unprecedented risks to global security. Today's world is threatened neither by the militant fanaticism of a territorially rapacious nationalist state nor by the coercive aspiration of a globally pretentious ideology embraced by an expansive imperial power. The paradox of our time is that the world, increasingly connected and economically interdependent for the first time in its entire history, is experiencing intensifying popular unrest made all the more menacing by the growing accessibility of **w**eapons of **m**ass **d**estruction -- not just to states but also, potentially, to extremist religious and political movements. Yet there is no effective global security mechanism for coping with the growing threat of violent political chaos stemming from humanity's recent political awakening. The three great political contests of the twentieth century (the two world wars and the Cold War) accelerated the political awakening of mankind, which was initially unleashed in Europe by the French Revolution. Within a century of that revolution, spontaneous populist political activism had spread from Europe to East Asia. On their return home after World Wars I and II, the South Asians and the North Africans who had been conscripted by the British and French imperial armies propagated a new awareness of anticolonial nationalist and religious political identity among hitherto passive and pliant populations. The spread of literacy during the twentieth century and the wide-ranging impact of radio, television, and the Internet accelerated and intensified this mass global political awakening. In its early stages, such new political awareness tends to be expressed as a fanatical embrace of the most extreme ethnic or fundamentalist religious passions, with beliefs and resentments universalized in Manichaean categories. Unfortunately, in significant parts of the developing world, bitter memories of European colonialism and of more recent U.S. intrusion have given such newly aroused passions a distinctively anti-Western cast. Today, the most acute example of this phenomenon is found in an area that stretches from **Egypt** to **India**. This area, inhabited by more than 500 million politically and religiously aroused peoples, is where NATO is becoming more deeply embroiled. Additionally complicating is the fact that the dramatic rise of China and India and the quick recovery of Japan within the last 50 years have signaled that the global center of political and economic gravity is shifting away from the North Atlantic toward Asia and the Pacific. And of the currently leading global powers -- the United States, the EU, China, Japan, Russia, and India -- at least two, or perhaps even three, are revisionist in their orientation. Whether they are "rising peacefully" (a self-confident China), truculently (an imperially nostalgic Russia) or boastfully (an assertive India, despite its internal multiethnic and religious vulnerabilities), they all desire a change in the global pecking order. The future conduct of and relationship among these three still relatively cautious revisionist powers will further intensify the strategic uncertainty. Visible on the horizon but not as powerful are the emerging regional rebels, with some of them defiantly reaching for nuclear weapons. **North Korea** has openly flouted the international community by producing (apparently successfully) its own nuclear weapons -- and also by profiting from their dissemination. At some point, its **unpredictability could precipitate the first use of nuclear weapons** in anger since 1945. Iran, in contrast, has proclaimed that its nuclear program is entirely for peaceful purposes but so far has been unwilling to consider consensual arrangements with the international community that would provide credible assurances regarding these intentions. In nuclear-armed Pakistan, an extremist anti-Western religious movement is threatening the country's political stability. These changes together reflect the waning of the post-World War II global hierarchy and the simultaneous dispersal of global power. Unfortunately, U.S. leadership in recent years unintentionally, but most unwisely, contributed to the currently threatening state of affairs. The combination of Washington's arrogant unilateralism in Iraq and its demagogic Islamophobic sloganeering weakened the unity of NATO and focused aroused Muslim resentments on the United States and the West more generally.

### 2NC --- China

#### AND solves Chinese expansionism into Tibet and Xinjiang

Mohan **Malik 2**, PhD, came to the Asia-Pacific Center for Security Studies in February 2001 from Deakin University in Australia where he was Director of the postgraduate Defense Studies Program, “Nervous Neig” The World Today, Vol. 58, No. 10 (October 2002), pp. 20-23

Should the Indo-Pakistani conflict **escalate into a nuclear one**, neither the geopolitical nor radioactive fallout would remain in South Asia. China would face difficult choices. Open support for its most allied ally would jeopardize relations with the US and India. But non- intervention on Pakistan's behalf could encourage India to solve the **Pakistan 'problem' once and for all**, tilting the regional balance of power **decisively in its favor**. **Unrestrained Indian power** could eventually **threaten China's security** along its soft underbelly - **Tibet and Xinjiang.**

#### Global nuclear war

Jeremy **Kahn 9**, Pew International Journalism Fellow – Johns Hopkins University and Former Managing Editor – New Republic, “Why India Fears China”, Newsweek, 10-10, http://www.newsweek.com/id/217088

China claims some 90,000 square kilometers of Indian territory. And most of those claims are tangled up with Tibet. Large swaths of India's northern mountains were once part of Tibet. Other stretches belonged to semi-independent kingdoms that paid fealty to Lhasa. Because Beijing now claims Tibet as part of China, it has by extension sought to claim parts of India that it sees as historically Tibetan, a claim that has become increasingly flammable in recent months. Ever since the anti-Chinese unrest in Tibet last year, progress toward settling the border dispute has stalled, and the situation has taken a dangerous turn. The emergence of videos showing Tibetans beating up Han Chinese shopkeepers in Lhasa and other Tibetan cities created immense domestic pressure on Beijing to crack down. The Communist Party leadership worries that agitation by Tibetans will only encourage unrest by the country's other ethnic minorities, such as Uighurs in Xinjiang or ethnic Mongolians in Inner Mongolia, threatening China's integrity as a nation. Susan Shirk, a former Clinton-administration official and expert on China, says that "in the past, Taiwan was the 'core issue of sovereignty,' as they call it, and Tibet was not very salient to the public." Now, says Shirk, Tibet is considered a "core issue of national sovereignty" on par with Taiwan. The implications for India's security—and the world's—are ominous. **It turns** what was once an obscure argument over lines on a 1914 map and some **barren**, rocky **peaks** hardly worth fighting over **into a flash point that could** **spark a war between two nuclear-armed neighbors**. And that makes the India-China border dispute into an issue of concern to far more than just the two parties involved. The United States and Europe as well as the rest of Asia ought to take notice—**a conflict involving India and China could result in a nuclear exchange**. And it could suck the West in—either as an ally in the defense of Asian democracy, as in the case of Taiwan, or as a mediator trying to separate the two sides. Beijing appears increasingly concerned about the safe haven India provides to the Dalai Lama and to tens of thousands of Tibetan exiles, including increasingly militant supporters of Tibetan independence. These younger Tibetans, many born outside Tibet, are growing impatient with the Dalai Lama's "middle way" approach—a willingness to accept Chinese sovereignty in return for true autonomy—and commitment to nonviolence. If these groups were to use India as a base for armed insurrection against China, as Tibetan exiles did throughout the 1960s, then China might retaliate against India. By force or demand, Beijing might also seek to gain possession of important Tibetan Buddhist monasteries that lie in Indian territory close to the border. Both politically and culturally, these monasteries are seen as key nodes in the Tibetan resistance to Chinese authority.

### 2NC --- Terror

#### Only kicking Pakistan’s ass will teach them a lesson to stop supporting terrorism

Lal **Singh 18**, former Jammu and Kashmir minister and BJP leader, “India should seriously consider "limited war" with Pakistan: Lal Singh”, https://economictimes.indiatimes.com/news/defence/india-should-seriously-consider-limited-war-with-pakistan-lal-singh/articleshow/64576864.cms

[India](https://economictimes.indiatimes.com/topic/India) should seriously consider a "**limited war with** [**Pakistan**](https://economictimes.indiatimes.com/topic/Pakistan)" as the time had come to **teach the neighbouring country a lesson**, former Jammu and [Kashmir](https://economictimes.indiatimes.com/topic/Kashmir) minister and BJP leader Choudhary Lal Singh said here today. Singh's outburst came in the wake of killing of four BSF personnel, including an officer, in firing by Pakistani Rangers in the Ramgarh sector in Samba district. "Time has come to **make the cost of military engagement of any kind with India unaffordable** for Pakistan and for that a limited war with Pakistan, which several military strategists have recommended, **should be seriously considered** and that too at the earliest," Singh said. Paying homage to the four BSF personnel, Singh said he would be failing in his national duty if he did not speak-up against the [naked aggression](https://economictimes.indiatimes.com/topic/naked-aggression) of Pakistan, which is a "**failed**" as well as a "**terrorist**" state. "We are losing jawans on almost every second day to the bullets of the enemies and we are talking about ceasefire. And there are demands for engaging Pakistan for a sustained dialogue," he said addressing a rally. Singh said that blinded by political ambition, regional political parties of Jammu and Kashmir, instead of seeking tough action against Pakistan, were pleading for a dialogue with it. "They have become vociferous advocates of Pakistan, Pakistan-based **terror outfits**, ISI and Pakistan Army. They have doubled their efforts to prevent the central government from taking an aggressive stance against Pakistan. But, I firmly believe, time has come to **teach Pakistan a lesson** which would not let it fire even a **single bullet** from across the international border or Line of Control (LoC)," said Singh.

### 2NC --- War Inevitable

#### War is structurally inevitable---multiple permanent and unalterable factors BUT India wil decisively win now---that’s key to save off worse suffering later AND solves terror sponsorship

Amarjit **Singh 18**, PhD, Assistant Professor of Conflict Resolution, School of Social Sciences, National Institute of Advanced Studies, “War with Pakistan is Inevitable”, http://www.indiandefencereview.com/news/war-with-pakistan-is-inevitable/

The net result of all the **millions of daily discussions** around the globe on India and Pakistan, the **continuous flow of articles and speeches** around the world on this subject, the **narratives** presented, **terrorism** in both Pakistan and India, the **posturing** and **skirmishes** between the two armies, and the **trend of emotions** of Indians and Pakistanis, **point unequivocally to the certain future that war between India and Pakistan is inevitable**, much to the dismay of all peaceniks. It is not anymore a question of “if”, but **only of “when.”** The desire to put Pakistan behind India and the world is driven by wanting to fully **close the chapter on terrorism** – to pull out a thorn and move ahead with the task of economy building – to bring peace on Earth. The overall issues in India-Pakistan relations are **deeply intertwined** such that they are **knotted**, with historical baggage **going back a thousand years**, and the knots **simply cannot be opened or released**. Instead, the knots are feeling tighter and tighter on a daily basis as **terrorism** increases, and as does China’s interest in Pakistan because of **CPEC**, the **oil of the Middle East**, and CPEC’s relation to OBOR. The Time for India to Act The time for India to act is getting more and more difficult as the years pass. For instance, it was relatively easy for India to take West Pakistan apart soon after the 1971 war, if India had so contemplated. To imagine that the USA would have invaded India in the early 1970s, had India invaded Pakistan or not returned the 93,000 prisoners, is most unreasoned, given that the USA was deeply embroiled in a war of its own in Vietnam, right up to its neck. Hence, the threats given by the USA to India were hollow, except that our leaders were hollower. It is well known that President Nixon gave a serious threat of military intervention to India should India not return the prisoners, and warned the USSR not to intervene[1], given the history of USSR submarines trailing the 7th fleet during the Bangladesh war. The USSR buckled, and imposed upon Indira Gandhi to return the 93,000 prisoners. And, Indira Gandhi, who was a likely protégé of the USSR, preferred to pay heed to them rather than her own advisors. After all, when she declared emergency in 1975, she was given information by “heads of state” that India was in danger by “external forces”, who then suggested to her to impose the emergency,[2] upon which she ruled like a dictator, much in the image of her Soviet superiors. In any event, India could have dismembered West Pakistan once again in the early 1980s when it was occupied with the Soviet invasion of Afghanistan. But, things kept getting more and more difficult after West Pakistan made its own atom bombs, and sponsored a massive terrorist action in Kashmir.Things also became psychologically difficult after two political assassinations of prime ministers in India within a short span of ten years, which upset and distracted the political mind in India. Through the 1990s and 2000s, Pakistan’s military was inferior to India’s, and still is inferior in the 2010s. Now, the possibility of nuclear war hangs as a shadow over the subcontinent, and Pakistan seems to depend on that to avert war. But, inasmuch as there are rationale actors on both sides that may only threaten nuclear war but not use it, the only match at this point is **who has inferior guts and inferior will**. The logic that nuclear weapons will deter conventional war is probably a full-blown **myth**.[3] In other words, when war starts, Pakistan is likely to **refrain** from using nuclear devices. India’s Defense Buildup The present BJP government under PM Modi has embarked upon a **major defense procurement program**. The program could be better and more effective, but the buildup will assure India’s **supremacy** and **victory** in the **inevitable war** with Pakistan. Thus, India is buying sufficient numbers of 155 mm light howitzers and attack helicopters that are necessary and supreme in mountain warfare. A massive missile program, both indigenous and imported, promises to dent and destroy Pakistani tanks, aircraft, ships, and incoming missiles. This is coupled with a significant naval buildup of frigates, submarines, submarine hunters, and additional aircraft carriers. Pakistan’s efforts pale in comparison. As soon as the buildup is substantially completed, **by 2022 supposedly**, and **while PM Modi is likely to be in his second term**, **it is very plausible that India will exercise its muscle, whether Pakistan is prepared or not**. Justifications of the Pakistan Military The Pakistani military has justified its existence in Pakistan on the basis of the Indian military threat. There are two parts to this threat, viz. (i) the Indian threat is real, or (ii) the Indian threat is imagined. For the former scenario, Pakistan has rightly calculated that it must keep up its guard. But, to justify the latter in the eyes of the public, Pakistan must still pose as if to keep up its guard, and create a string of problems on the border with India even if none took place, so as to justify its own existence as an elite organization that is entitled to the lion’s share of the country’s resources. Hence, we see a proxy war fought by Pakistan in Kashmir that is continuing relentlessly till today. In either scenario, the Pakistani military manages to maintain an elite status for itself and its officers, garnering immense respect in the eye of the public, such that the Pakistanis have come to depend on the military, notwithstanding that Ayub Khan, Yahya Khan, and Pervez Musharraff took them from one disaster to another. They have still not recovered the goodwill that Pakistan lost in the world after Musharraf’s ill-fated Kargil campaignon the world stage. But none of this daunts the Pakistani public, who depend on the Generals for their survival as a nation. The Pakistanis Who See Through However, there is a major segment of the Pakistani public, including intelligentsia, who understand that the present situation, starting from Pakistan’s 1948 expedition in Kashmir, is a result of Pakistani mischief. Every bit of international terrorism, the adventures in and of Kargil, 1999, East Pakistan, 1971, and the Indo-Pak war, Sept 1965 are a result of **Pakistani aggression**.[4] They are honestly scared that Pakistani shenanigans can spiral out of control, result in Western sanctions on Pakistan, and culminate in a Pakistan broken into pieces.[5],[6] A Little Bit of Muscle Made a Big Difference Recent changes in Pakistani media and a change in the tunes that Pakistanis sang, suffered a dramatic change with a small surgical strike by India. Up till now, Pakistan took as much advantage as they could of the quiet and cowardly behavior by India. Hence, Pakistan tried to press home its advantages so long as India did not retaliate — much like a bully in school keeping up his bullying tactics till confronted. The narrative on Pakistani talk shows began to change ever since the surgical strike by India, which even begs the question why India does not react more frequently, as does Israel against its belligerent neighbors. But overnight, Pakistanis went from assailing India to talking of peace. And, this happened with simply a small surgical strike by a mostly cowardly India[7]. **What would happen if India did something bigger than only a surgical strike?** Surely, logic would dictate that **Pakistan would reform itself**. Sometimes, one has to **slap a child to rectify behavior**. War Scenarios To a great extent, Pakistan draws its political strength from the voices of the public, not only its military. Hence, with a Pakistani public that sees a tiger in India rather than a mouse, **the will of Pakistan stands a chance to change**. Nevertheless, simply undertaking stronger and deeper surgical strikes at higher frequencies may not be the answer. The fact is, there are multiple war scenarios, **each of which cannot prevent war**. An overall scenario, where the **politicians** on both sides, the **military** generals on both sides, the **media** on both sides, and the **public** on both sides do not want war is **immensely hard to come by.** **Should only one of the above elements be lacking in either side, war is inevitable**. Add to this mix, the **Pakistani terrorist organizations** fuelling the path to war, as well as **ISI’s aid to Indian homegrown terrorists**. How any adverse combinations can be stopped by **political action and negotiations** defeats **every analyst and politician**, because **efforts of 70 years have failed**. In fact, their efforts to reconcile India-Pakistan differences, such as the return of territories in 1965 under Russian mediation; return of 93,000 POWs and territories in 1971 under American threats; and not crossing the LOC during the Kargil war, **only delayed the inevitable**, and brought no good to the region or the world in the interim. **It appears that only war can solve this Gordian knot that strangles both India and Pakistan**. **The sooner this strangulation is released, the better for all the people on both sides**. There are **48 scenarios** where the above combinations have at least one antagonist on the other side. This is excluding the terrorist combination, but if you include them, certainty for war simply rises. When there are two antagonists – one on each side – **war has a very high chance;** when there is at least one antagonist – which is all that one really needs for war – the chances are still high. Hence, the flat probability of at least one antagonist on each side is 75%. Further, the actual probability – not the flat probability — that all elements will not want war, given the deep hostilities and in-built feelings – **is practically zero.** Thus, if the voice of the Pakistani generals, or voice of the Indian public goes highly in favor of war, war stands an increased chance; if the voice of the Indian politicians or Pakistani public increases for war, then war will ensue: from the Indian side, the politicians can give a direct order; from the Pakistani side, the public pressure can be felt on their politicians and military. The same theories work on both sides. Anyone can analyze those 48 combinations. The theory behind them is that any strong voice from among the four elements – and terrorists as the fifth element – **will influence the war-making decision-makers**. Even the **media** can have a **very powerful effect** on the leaders of the country, especially in a small country like Pakistan. For instance, the tit-for-tat nuclear tests by Pakistan in 1998 were influenced very strongly by the public, parliament, and the media.[8] The force in the Indian public appears particularly strong in that it wants Pakistan taken properly care of once and for all. The voices in the BJP also say the same. Overall Chances of War Given the inbuilt misgivings and distrust on both sides, **the overall chances of war far exceed the chances of peace**. The entire culture in which three generations have come up in India and Pakistan, and the continuing and misguided actions at the border, **there is little to no chance to reverse this trend by trade, political deals, or person-to-person contacts**. The deep differences between India and Pakistan are **irreconcilable** by any technique of alternate dispute resolution, despite all the efforts of 70 years. **Alas, given that the odds favor war, the question is only when, not if. Hence, war is inevitable, and India has no choice but to arm to protect its interests – this time with the aim of overtaking Pakistan fully – and swiftly**. The only choice India faces is about how it wishes to win the war – slowly, with pain – **or swiftly, before the world wakes up** – or, in fact – to lose the war by neglecting its defense, as it nearly lost at Kargil, was caught unprepared in the Rann of Kutch in 1965, and actually lost in the 1950s to China by yieldinghuge tracts of Kashmir to Chinawithout a shot being fired because India did not even have observation posts on its borders.[9] Questions to also ask now, are: how well does India wish to plan the next war? Will it wait for a Pakistani or terrorist attack, **or will it take the initiative on its own?** Has India got the **nerve** and the **willpower** to want to move ahead or does it wish always to be pulled down in perpetuity by a Pakistan – much to the wishes of a modern China and erstwhile Great Britain? Closure The reading from the tealeaves is that all indicators at a political, military, public, and media perspective, points to war. At present, there is a strong call among the Indian public to demolish Pakistan and get over with the nuisance that Pakistan is. The major elements of the public, the media, the military, and the political leaders can combine in 48 different ways to create a strong, overwhelming route to war, and this is not even considering that terrorism is a strong fifth force. Thus, war appears inevitable once again on the subcontinent. It is quite certain that the story will not finish on this till the story of Pakistan is finished in Indian eyes.

Answers To

### 2NC --- AT No Loose Nukes

#### Safeguards is wrong---the best evidence says Pakistan’s nukes are increasingly insecure

Rahmatullah **Nabil 17**, served as the head of Afghanistan’s national directorate of security from 2010 to 2012 and from 2013 to 2015., "The World Must Secure Pakistan’s Nuclear Weapons," New York Times, 4-20-2017, https://www.nytimes.com/2017/04/20/opinion/the-world-must-secure-pakistans-nuclear-weapons.html

KABUL, Afghanistan — Pakistan is not just one of nine countries with nuclear weapons, it is also a hotbed of global jihadism, where the military and the intelligence services use terrorist networks to advance their regional goals. And even as Pakistani officials proclaim that their nuclear assets are secure, evidence, including internal Pakistani documents, suggests that they know better. **Having served in senior roles in Afghanistan’s intelligence services, I have good reason to be skeptical about Pakistan’s ability to keep its nuclear weapons safe from extremists**. The international community, working with the United Nations Atomic Energy Agency or the United Nations Security Council, must take action to **prevent a global catastrophe** **before it is too late**. **Pakistan is believed to have the fifth-largest nuclear arsenal in the world**, larger than Britain’s. It also has an established history of giving nuclear technology to countries like Iran and North Korea. As the Trump administration begins developing its policies toward Pakistan and toward nuclear nonproliferation, it should make Pakistan a top priority. Pakistanis with the most knowledge of the country’s nuclear program are among the most worried. On Dec. 16, 2014, the Taliban launched a deadly attack on an army-run school in the Pakistani city of Peshawar. Afterward, Pakistan’s **A**tomic **E**nergy **C**ommission sent an urgent letter to the director general of the Strategic Plans Division, which is responsible for securing Pakistan’s nuclear assets, expressing concern. The Atomic Energy Commission requested that the military devote more resources to ensuring that the personnel with knowledge of the nuclear program are monitored. This letter, which has been kept secret until now, reveals just how concerned some Pakistani officials are — and how worried the rest of the world should be. The **A**tomic **E**nergy **C**ommission is not the only group sounding alarms about the role of extremists inside Pakistan. In early 2014, the ministry of interior issued a policy paper called the National Internal Security Policy 2014-2018, a classified document that outlined the government’s security priorities. It warns that **Pakistan is home to hundreds of terrorist and extremist groups**, and points out that many of them are operational in all four provinces of Pakistan, including in the areas in Punjab near some of Pakistan’s **nuclear facilities**. This document also **raises concerns over the growing influence of certain terrorist groups**, in particular Lashkar-e-Taiba, inside the Pakistan Army and intelligence agencies, and within the families of senior and midlevel military officers.

#### Yes motive---LeT is currently training students to enter Pakistan’s nuclear program to carry out their mission of global jihad

Roy **Chaudhury 18**, M.A. in International Relations from Jadavpur University, former Program Director at the Aspen Institute India, "Hafiz Saeed's men already know ABCD of nuclear bomb", Economic Times, https://economictimes.indiatimes.com/news/defence/hafiz-saeed-asks-students-to-be-part-of-pakistan-atomic-bodies/articleshow/55949059.cms

The head of terrorist group Jamaat-ud-Dawa, Hafiz **Saeed**, is **encouraging students** from Pakistan’s prestigious University of Engineering and Technology (UET) to join **Pakistan Atomic Energy Commission** and Khan Research Laboratories after graduation. This has led to dozens of **JuD affiliated members from UET joining the country’s nuclear institutions**, raising fears of nuclear weapons falling in hands of **terrorists**, a new book titled ‘Pakistan: Courting The Abyss’ has warned. In his maiden book, Tilak Devasher, **who retired from the cabinet secretariat** and dealt extensively with India’s neighbourhood, paints a **grim picture** of the growth of **extremist groups** and their **access to sophisticated technology**. “LeT’s efforts to access nuclear weapons should also be noted. In his book, ‘Call for Transnational Jihad’, Arif Jamal reveals that since his days as a teacher in UET, Hafiz Saeed and co-founder of the JuD Zafar Iqbal had been encouraging their students to join the country’s nuclear science and technology institutions like PAEC and KRL after graduating from UET." Devasher has written in the chapter on terror infrastructure in Pakistan. The book further says, “Jamal believes that dozens of JuD members from UET and other universities have joined Pakistan’s nuclear and technology institutions. It is this penetration of state institutions, including nuclear ones, that seems to have convinced the JuD that **it is likely to acquire access to nuclear technology.** This may come sooner than imagined given the JuD’s ability to realise its plans systematically and cool-headedly, he warns.” UET, based in Lahore and one of the highest ranked universities in Pakistan, was founded in undivided India. Khan Research Laboratories was founded was by infamous AQ Khan, who had helped North Korea acquire nuclear weapons and maintained links with Libya. Devasher has written in the book that “it is worth noting that Dr AQ Khan was reported to have attended the rallies of Hafiz Saeed together with other nuclear scientists like Sultan Bashiruddin Mehmood, former director of PAEC and Abdul Majid”. “The latter’s charity Umma Tameer-e-Nau (UTN) was found to be in correspondence with the LeT and papers on construction and maintenance of nuclear weapons were found on their premises. These two scientists had separately met **Osama bin Laden**. Speaking at a Kashmir Solidarity Day rally in Lahore on 6 February 2004, Hafiz Saeed said: ‘He (AQ Khan) shared the **technology for the supremacy of Islam** and he acted on Allah’s command,” the book says.

### 2NC --- AT Nuke Winter

#### Counterforce targeting massively limits fallout – won’t trigger a nuclear winter

**Lieber and Press 13** – Keir, Professor @ Georgetown, Daryl, Professor @ Dartmouth, “The New Era of Nuclear Weapons, Deterrence, and Conflict,” 7(1), https://www.files.ethz.ch/isn/162442/spring\_2013.pdf

The first set of arguments is about an important, yet virtually unnoticed, consequence of changes in military technology and the balance of power. In a nutshell, the same revolution in accuracy that has transformed conventional warfare has had equally momentous consequences for nuclear weapons and deterrence.2 Very accurate delivery systems, new reconnaissance technologies, and the downsizing of arsenals from Cold War levels have made both conventional and nuclear counterforce strikes against nuclear arsenals **much more feasible than ever before**. Perhaps most surprising, pairing highly accurate delivery systems with nuclear weapons permits target strategies that would create **virtually no radioactive fallout, hence, vastly reduced fatalities.**

#### Limited nuke war has almost zero environmental effect

David H. **Davis 16**, PhD from Johns Hopkins University, Professor of Political Science and Comparative Environmental Policy @ University of Toledo, formerly worked for the EPA, “Environmental Effects of Limited Nuclear War”, https://patimes.org/environmental-effects-limited-nuclear-war/

Time for more bad news. Last February I wrote about the horrific environmental effects of an all-out nuclear war. As few as 200 warheads on each side could cause Nuclear Winter by blasting so much smoke and dust into the atmosphere that the sunlight reaching the Earth would only be as much as on a winter day. Photosynthesis would be impossible. All plants would die, followed by all animals (including humans) dying of starvation. But what would be the effects **only a few nuclear bombs?** A few back of the envelope calculations should enlighten us. North Korea is the country most likely to unleash this destruction. It has tested five bombs and appears to have fissile material to build 20 more warheads of about 10-30 kilotons, roughly the size of the bomb dropped on Hiroshima. One scenario might be for North Korea to launch five missiles against Seoul, the Demilitarized Zone (DMZ), Busan, Tokyo and Guam. If the United States were to retaliate on behalf of South Korea, it might launch five “tactical” nukes against Pyongyang, the base at Yongbyon, and the DMZ. Let us assume this destroys the Communist regime, thus ending the war. The loss of life would be tragic. The Hiroshima bomb killed 70,000 initially and another 70,000 from radiation. The Nagasaki bomb killed 40,000 initially and 25,000 later. The present population of Seoul is 10 million, 40 times as big as the Japanese cities in 1945. The population of Pyongyang is two and a half million. Tokyo has over 13 million. Thus, while many would die, **most would survive.** The **environmental aftermath** of a hypothetical Korean Nuclear War would be destruction in **four or five cities** and **rural contamination** near the DMZ and the military bases. We have two comparisons for the rural situation. The 1986 meltdown of the **Chernobyl** reactor in the Soviet Union left a zone of land too hot for habitation. The Soviets evacuated the area and excluded resettlement. **Scientists have carefully studied the consequences**. Immediately following the accident, radioactive iodine contaminated plants, cows and thus the milk. However, after a few years, **this dissipated and fell to normal levels**. Cesium 137 was a greater problem with a longer half-life: 30 years. Because people no longer lived in the exclusion zone, plants and animals like boars, wolves and elk have thrived, making it an **Eden**. The Soviets had a previous event with a similar outcome. In 1957, a nuclear explosion of still unknown causes spread radioactive materials near Kyshtym in the Ural Mountains. Ten thousand people were evacuated and not allowed to return. Today, radioactivity has **returned to normal levels.** Interestingly, Korea has its own area of exclusion: the Demilitarized Zone (DMZ). The DMZ was established in 1953 in the cease-fire at the end of the war. This extends back from the center line for 2000 meters on each side and goes 150 miles across the county. No one lives there. Soldiers occasionally patrol the zone on foot, but there is no habitation. Since 1953, the DMZ has grown up with forests and animals. Rare ones include lynxes, bears, water deer and red crowned cranes. Yet before rhapsodizing over the edens of Chernobyl, Kyshtym and the DMZ, we should remember the human cost of a Korean Nuclear War. Korea is not the only possible site for a limited nuclear exchange. Iran was spinning centrifuges to enrich nuclear fuel until bought off by the Joint Comprehensive Plan of Action of 2015. It’s presumed target was Israel, a tiny country. Jerusalem is off-limits to attack because of so many Muslim holy sites like the Dome of the Rock on the Temple Mount, making Tel Aviv just about the only place to aim. It is virtually certain that Israel has its own nuclear force, numbering 75 or more warheads in contrast to the handful Iran could produce quickly if it violated the Comprehensive Plan. The only consolation is that Iran has more deserts at which to aim. Pakistan tested its first nuke in 1998. Although it has not attacked with a nuke in the 18 years since, the government has suffered numerous coups d’etats. Furthermore, the evidence is strong that it sold the technical plans for the weapon to North Korea. Possibly ISIS could get enough radioactive material to make a dirty bomb, that is, use conventional explosives to scatter the radiation around a city. However, this would be far less dangerous than a real nuclear weapon. In conclusion, the environmental dangers of exploding a few nuclear weapons **pale in comparison** to the immediate destruction and loss of life for hundreds of thousands. **It would not cause a Nuclear Winter ending life on Earth**. **As with Chernobyl and Kyshtym, after 30 years the land would return to normal.** This, however, is not a reason to ignore the risk of war.

#### Specifically, an Indo-Pak nuke war only kills 1% of India and 7% of Pakistan!

Rabb **Khan 9**, professor @ King Khalid University, Abha, Saudi Arabia, he specializes in security issues, foreign relations and terrorism, “Price of an Indo-Pak War”, Newstrack India, 1/20/2009, http://www.newstrackindia.com/newsdetails/62680

Let us turn to unprecedented casualty in case of a nuclear conflict: **Natural Resources Defence Council** (NRDC), the New York based global think tank, in its report, “The Consequences of Nuclear Conflict between India and Pakistan” has [been] calculated the **human costs** of an Indo-Pak nuclear conflict. As per NRDC estimates, both countries have a total of 50 to 75 nuclear weapons. Depicting a nuclear war Scenario (10 bombs on 10 South Asian cities), it says that attack on 10 major cities – 5 each in India and Pakistan – would result in a combined death toll of 2,862,581, with 1,506,859 severely injured and 3,382,978 slightly injured. On Indian side, death toll is estimated at 1,690,702, while 892,459 and 2,021,106 would be severely and slightly injured respectively. On Pakistan side, a total of 1,171,879 people would die, while, 614,400 and 1,361,872 are to be severely and slightly injured. In another scenario (24 Ground Bursts), NRDC calculated the consequences of 24 nuclear explosions detonated on the ground – unlike the Hiroshima airburst – resulting in significant amounts of lethal radioactive fallout, which is far more severe nuclear exchange between India and Pakistan. The report was first appeared in the January 14, 2002, issue of Newsweek (A Face-Off with Nuclear Stakes). **Contrary to ground burst, exploding a nuclear bomb above the ground does not produce fallout**. For example, can we imagine the consequences of ground burst if the “Little Boy” detonated by the US above Hiroshima at an altitude of 1,900 feet could kill 70,000 people in the immediate effect with some 200,000 died up to 1950? NRDC calculated that 22.1 million people in India and Pakistan would be exposed to lethal radiation doses of 600 roentgen equivalents in man or REM (a large amount of radiation) or more in the first two days of the attack. In addition, about 8 million people would receive a radiation dose of 100 to 600 REM causing severe radiation sickness and potentially death. In all, as many as 30 million people of both countries would be eliminated by nuclear war. Besides fallout, blast and fire would cause substantial destruction within roughly a mile-and-a-half of the bomb craters. However, **even after such a devastating annihilation** of population, about **99 percent of the population in India** and **93 percent of the population in Pakistan** would survive the second scenario and their respective military forces would still be intact to continue the conflict. In short, there is nothing to gain from a war, just plenty to lose. Albeit **loss of human life would be immense it would not be large enough to result in extinction** of Indo-Pak populations or even prevent continuation of a military conflict. Thus, the consequences, though horrific, are not strong enough to rule out Indo-Pak conflict in future. Had size of the Indo-Pak nuclear arsenals equal to those of the US and Russia, a complete annihilation of entire population of the Indian sub-continent would have been possible.

#### Nuclear war between India and Pakistan won’t cause nuclear winter

**Eland 3** (Ivan, Senior Fellow and Director of the Center on Peace and Liberty – Independent Institute and Assistant Editor – Independent Review, “The New Nuclear Danger: George W. Bush’s Military-Industrial Complex: Book Review”, Independent Review, 8(2), Fall, http://www.independent.org/tii/content/pubs/review/books/tir82\_caldicott.html)

Caldicott’s far-fetched arguments do the most harm to the cogent parts of her book. She asserts that in a possible nuclear exchange between India and Pakistan, “if any of either Russia or America’s 2,250 strategic weapons on hair-trigger alert were launched either accidentally or purposefully in response, nuclear winter would ensue, meaning the end of most life on earth” (p. xiii). Even if the **dubious** nuclear-winter thesis is accepted, a mini-nuclear war on the Asian subcontinent plus one Russian or U.S. nuclear warhead is **unlikely** to bring about such **cataclysmic climate change.**

### 2NC --- AT Lieber and Press

#### Get out

**Lieber and Press 17** – Keir, Professor @ Georgetown, Daryl, Professor @ Dartmouth, “The New Era of Counterforce,” International Security 41(4), Project Muse

30. **We focus on U.S. capabilities, but recent versions of** Israel's Jericho, **India's Agni**, Pakistan's Hatf, and Russia's Iskander **nuclear-capable missiles employ advanced guidance systems that may outperform even the best contemporary U.S. ballistic missiles described here**. See Hans M. Kristensen and Robert S. Norris, “Israeli Nuclear Weapons, 2014,” Bulletin of the Atomic Scientists, Vol. 70, No. 6 (November 2014), pp. 97–115; “Quiet Leap,” Aviation Week & Space Technology, Vol. 175, No. 26 (July 2013), p. 1; Hans M. Kristensen and Robert S. Norris, “Indian Nuclear Forces, 2015,” Bulletin of the Atomic Scientists, Vol. 71, No. 5 (September 2015), pp. 77–83; James C. O'Halloran, IHS Jane's Weapons: Strategic (London: IHS, 2015), p. 33; Hans M. Kristensen and Robert S. Norris, “Pakistani Nuclear Forces, 2015,” Bulletin of the Atomic Scientists, Vol. 71, No. 6 (November 2015), pp. 59–66; and “SS-26 (Iskander),” MissileThreat (CSIS Missile Defense Project), September 27, 2016, <https://missilethreat.csis.org/missile/ss-26/>.

### 2NC --- AT Draw In

#### No draw in---demonstrating the effectiveness of Indian counterforce deters China because it shows getting involved creates unacceptable losses---that’s Narang

#### China has officially stated they won’t get involved

**Economic Times 17**, "Rajiv Gandhi's visit to China broke the ice: Chinese diplomat", https://economictimes.indiatimes.com/news/politics-and-nation/rajiv-gandhis-visit-to-china-broke-the-ice-chinese-diplomat/articleshow/61066662.cms?utm\_source=contentofinterest&utm\_medium=text&utm\_campaign=cppst

Li who made a reciprocal trip to New Delhi in 1991 clarified during his talks with the then Indian Prime Minister, P V Narasimha Rao that "**China would not get involved in any dispute between India and Pakistan** hoping that the issues could be resolved in a reasonable manner through peaceful consultation", Zeng wrote.

#### The US won’t get involved either---Trump doesn’t care

Hannah **Haegeland 18**, analyst in the Stimson Center’s South Asia Program, "Who Will Prevent the Next India-Pakistan War?", Defense One, https://www.defenseone.com/ideas/2018/12/who-will-prevent-next-india-pakistan-war/153236/

Since then, nuclear and conventional arms buildup in the region has raised the potential costs of escalation. The possibility of a future India-Pakistan crisis remains high—all against a backdrop of heightened firing across the Line of Control, growing fissile material stockpiles, evolving strategic doctrines, and developments in nuclear delivery systems. Meanwhile, **U.S. leverage** in Pakistan is in **decline**, and both the **preparedness** and **inclination** of the Trump administration to play the traditional U.S. **third-party crisis manager** role in a future India-Pakistan standoff is **uncertain**.

#### Especially because he hates Pakistan

Athar **Hussein 18**, "Trump pledges to end foreign aid to Pakistan and Afghanistan over bin Laden inaction", https://www.rt.com/news/444383-trump-pakistan-bin-laden/

President Trump has promised to cut aid to countries like Pakistan and Afghanistan **that “do nothing for us,”** and has accused Pakistan of **sheltering Osama bin Laden** since 9/11. “Of course we should have captured Osama Bin Laden long before we did. I pointed him out in my book just BEFORE the attack on the World Trade Center,” Trump tweeted on Monday, seemingly hinting that he knew bin Laden was bad news before 9/11. “President Clinton famously missed his shot. We paid **Pakistan** Billions of Dollars & they never told us he was living there. **Fools**!” “We no longer pay Pakistan the $Billions because they would take our money and do nothing for us, **Bin Laden being a prime example**, Afghanistan being another,” he continued. “They were just one of many countries that take from the United States **without giving anything in return**. **That’s ENDING**!” The Trump administration has already cut almost $800 million off its $1.3 billion yearly military aid to Pakistan this year, arguing that the Pakistani government has not done enough to clamp down on Taliban extremists operating within its borders. In an interview with Fox News on Sunday, the president said that the Pakistanis “**don’t do a damn thing for us,”** again mentioning their alleged complicity in sheltering Osama bin Laden.

#### No draw-in OR extinction

**Dyer 2** (Gwynne, Ph.D. in War Studies – University of London and Board of Governors – Canada’s Royal Military College, “Nuclear War a Possibility Over Kashmir”, Hamilton Spectator, 5-24, Lexis)

For those who do not live in the subcontinent, the most important fact is that the damage would be largely confined to the region. The Cold War is over, the strategic understandings that once tied India and Pakistan to the rival alliance systems have all been cancelled, and no outside powers would be drawn into the fighting. The detonation of a hundred or so relatively small nuclear weapons over India and Pakistan would not cause grave harm to the wider world from fallout. People over 40 have already lived through a period when the great powers conducted hundreds of nuclear tests in the atmosphere, and they are mostly still here.

### 2NC --- AT Pakistan TNWs/Pre-Del

#### Pre-delegation of TNWs is a negative argument---the point of the turn is that India will take any sign of escalation on part of Pakistan as an indicator that they are about to be nuked---even the deployment of TNWs on the battlefield will trigger an Indian first strike, which we’re saying is good---and just proves our point that India will go first

Ryan **French 16**, researcher and operations specialist for the Naval War College’s Strategic Research Department, “Deterrence Adrift?: Mapping Conflict and Escalation in South Asia”,  Strategic Studies Quarterly , Vol. 10, No. 1 (SPRING 2016)

\*\*\*TNWs = Tactical Nuclear Weapons

Notably, retired Indian flag officers in numerous Track II forums have stressed that **India will not wait to be bombarded by TNWs** but will instead **aggressively target and destroy any missile launchers it detects on the battlefield**.93 Brigadier Kanwal concurs, writing that India will **proactively employ a combination of missiles, artillery, and airstrikes** against deployed Pakistani batteries.94 Although limitations in Indian intelligence, surveillance, and reconnaissance would make finding the batteries a challenging proposition, the search area would be mitigated by virtue of the Nasr’s **diminutive 60-km range**, which implies the batteries would be deployed fairly **close to the international border**. To the extent India successfully locates and degrades Pakistan’s battlefield nuclear deterrent, the **pressure** to **employ** the **weapons** will **increase**. In the final analysis, the deployment of TNWs as a deterrence signaling or war-fighting measure against an Indian invasion would likely **drive New Delhi** and Islamabad **up the escalation ladder**. While it is true Pakistan has other nuclear deterrence signals at its disposal besides Nasr, for example, the raising of nuclear alert levels, veiled diplomatic pronouncements that “all options remain on the table,” dispersing nuclear assets for survivability, and ballistic missile flight tests, it has developed Nasr for the express purpose of pouring “cold water on Cold Start.”95 This suggests—**quite dangerously**—that Pakistan believes its TNWs have conferred a degree of escalation dominance over India. At the very least, it implies that Pakistan sees TNWs as a **risk manipulation** device, akin to the **Comprehensive Response doctrine**. Thus, if New Delhi decides to launch a series of limited, cross-border ground offensives, the possibility that Indian forces will encounter Nasr cannot be ruled out.

### 2NC --- AT Nuclear Taboo

#### No nuclear taboo impact---it’s theoretically wrong and explains nothing about deterrence outcomes

Matthew **Kroenig 18**, Associate Professor in the Department of Government and the Edmund A. Walsh School of Foreign Service at Georgetown, 2018, The Logic of American Nuclear Strategy: Why Strategic Superiority Matters, p. 30

A similar, but more modest, claim comes from Nina Tannenwald, who makes the case for the “nuclear taboo.”56 She argues that there is a strong normative prohibition against the use of nuclear weapons. She maintains that the norm first appeared in the 1960s and has developed, gradually gaining strength through fits and starts, since that time. Due to this taboo, Tannenwald claims that the use of nuclear weapons has become “unthinkable” and time and again US officials did not consider using nuclear weapons, even in situations in which nuclear weapons use could have advanced US interests. Tannenwald makes a strong case that many US leaders evince a moral inhibition against the use of nuclear weapons, but the theory is **less compelling** in other ways. She does not demonstrate that this inhibition is **truly taboo-like** in its strength. After all, unlike nuclear-armed states with nuclear arsenals and employment strategies, most humans do not actively develop and maintain tools and contingency plans to engage in other taboo behaviors, such as cannibalism. Moreover, any American inhibitions on nuclear use do not appear to extend beyond its leadership. Recent scholarship shows that the American public is quite willing to support nuclear strikes on an enemy if it means saving American lives.57 Moreover, Tannenwald focuses only on the **U**nited **S**tates and does not convincingly show that the taboo extends to other countries. If other states are willing to threaten or use nuclear weapons, then the **U**nited **S**tates must take that reality into account in its own national security strategy. Further, like many other scholars of nuclear issues, she zeroes in on a narrow outcome, **decisions on intentional nuclear use**, and, thus, **overlooks much of the action in nuclear politics**. Her theory does not tell us much, if **anything**, about nuclear war outcomes, or about **deterrence and coercion episodes** between nuclear-armed states. Moreover, the argument that leaders are loathe to intentionally launch a nuclear war is consistent with the central argument of this book. The superiority-brinkmanship synthesis theory also maintains, albeit for different reasons, that leaders are unable to credibly threaten nuclear war and it is for this reason that they must settle for threatening to risk one.

#### The nuclear taboo won’t restrain adversaries---classic deterrence is a far better explanation for the lack of nuclear war

Michael **Frankel 17**, leading expert on the effects of nuclear weapons, senior researcher at the Johns Hopkins University Applied Physics Laboratory, was associate director for advanced energetics and nuclear weapons in the Office of the Deputy Under Secretary of Defense (Science and Technology), chief scientist of the Defense Nuclear Agency’s Nuclear Phenomenology Division, research physicist at the Naval Surface Weapons Center, et al., 2017, “Nonstrategic Nuclear Weapons at an Inflection Point,” <https://www.jhuapl.edu/Content/documents/NonstrategicNuclearWeapons.pdf>

It has been over seventy years since nuclear weapons were employed for the first and only time in war. With remembrance of the horrific lethal effects of these weapons seared into the world’s consciousness, and the passage of time with no further use, many perceive a **taboo** against their use and therefore argue that their presence in Europe no longer serves a useful military purpose. But the world is a **very dangerous place**, and it is fair to question whether such a social construct as taboo **really plays a significant role** in restraining the use of nuclear weapons, or indeed **exists at all**. Many would argue that it is rather a well-founded fear of the possible consequences of use (i.e., **classic deterrence**) that is **solely responsible** for limiting their use to date. Certainly in a world inhabited by nuclear-armed states such as North Korea or would-be and perhaps will-be states such as Iran and potentially others, driven by cultural histories and ideologies **quite foreign to Western social and philosophical milieus**, one must question the conjectured efficacy of taboos as a nuclear preventative. And even in a Eurasian power such as Russia, which shares in large parts of the European cultural patrimony, the enduring power of a conjectured nuclear taboo is questionable.

#### No nuclear taboo impact---any use would spark global efforts at de-escalation

Michael **Shellenberger 18**, President of Environmental Progress, a research and policy organization, 8/29/18, “For Nations Seeking Nuclear Energy, The Option To Build A Weapon Remains A Feature Not A Bug,” https://www.forbes.com/sites/michaelshellenberger/2018/08/29/for-nations-seeking-nuclear-energy-the-option-to-build-a-weapon-remains-a-feature-not-a-bug/#56da660b2747

One of the many dark fantasies about nuclear weapons is that if one were used anywhere it would lead to full-scale nuclear war everywhere. And yet the most likely use of one would be tactical — against invading troops. Pakistan might say, “If we use our own nukes, on our own territory, in the desert, against an Indian strike corps, we haven’t given them justification to use nuclear against our cities,” notes Narang. “But even then, it would be an event of such magnitude that **the world would race to stop it from escalating**,” he adds. “The first use of nuclear bomb since 1945? I think people will stop and ask, 'What the hell just happened?' and the international community will **race to try to stop escalation**.” In other words, while there is in fact a real-world relationship between nuclear energy and weapons, the relationship between weapons and the widely-feared nuclear apocalypse, or even a return to wars as brutal as World War II, is entirely imaginary — the stuff of movies, novels, and scenarios. In the real world, nuclear weapons have **only been used to end or prevent war** — a remarkable record for the world’s most dangerous objects.

### 2NC --- AT Re-arm

#### Nope---they’re a pit bull now, but nuking them will turn them into a poodle

Rajeev **Srinivasan 4**, international politics expert, has a degree from Stanford, "Give war a chance", Rediff, https://www.rediff.com/news/2004/jan/30rajeev.htm

American military historian John Keegan says in Intelligence in War: 'Decision in war is always the result of a fight, and in combat, willpower always counts for more than foreknowledge… **It is force**, not fraud or foresight, **that counts**… Knowledge of what the enemy can do and of what he intends to do is never enough to ensure security, unless there are also the **power** and the **will to resist and preferably to forestall him**.' In other words, carry a big stick, and be prepared to use it, and make people believe you will use it, too. **The fact of the matter is that Pakistan cannot win any war with India, conventional or nuclear**. Yet, we let this pathetic little failed state **nag us to death**. This shows an absence of will to take the **necessary pain of war.** In the words of strategic affairs expert Brahma Chellaney, 'Global history testifies to the fact that peace is the outcome of war. **But for peace to prevail** for a significant period, the **war has to be decisive**. The enemy has to be humbled and disarmed. The peace the West is enjoying for almost 60 years is the outcome of World War II. Unfortunately, **India does not fight or even plan decisive wars**. **That is the reason why Pakistan keeps coming back at India**.' The will and capacity to take the hits is something India displayed after Pokhran II. Then the usual suspects moaned that American sanctions would ruin India, so we should rollback our nuclear program. India stood firm, however. And surprise, surprise, this week the Americans entered into a comprehensive engagement with India in space, nuclear technology, and so forth, in effect putting India on par with NATO! Similarly, **calling Pakistan's bluff** will **reduce this pit bull to a poodle in no time.**

### No War – New Leaders

#### Zero risk of indopak war

**Kumar, 13** (Sanjay – correspondent for The Diplomat, “Pakistan’s Elections: A Harbinger of Peace on the Subcontinent?”, The Diplomat,<http://thediplomat.com/the-pulse/2013/05/16/pakistans-elections-a-harbinger-of-peace-on-the-subcontinent/>)

Now that we know Nawaz Sharif will succeed Raja Pervez Ashraf as the next prime minster of Pakistan, it’s worth noting that **Pakistan has never seen a democratic transition as smooth** as the one set to take place between the outgoing Pakistan Peoples Party (PPP) and the newly elected Pakistan Muslim League-Nawaz, or PML(N).

In its 66-year history as an independent nation, Pakistan has witnessed three military coups and extended rule by army generals. Even today, the nation is plagued by political turmoil. But **this year seems to be a new chapter** in its turbulent history.

The verdict from the 2013 elections gives the PML(N) 123 seats out of 254 declared results as of Tuesday evening, giving Sharif’s party an unassailable lead over its main rivals, PPP and Imran Khan's Pakistan Tehreek-e-Insaf, which had secured 31 and 26 seats, respectively. The electoral results for the final 18 of Pakistan’s 272 National Assembly seats remain unannounced.

The **voter turnout this year was impressive**, with 60 percent of all registered voters turning up to the polls, up from a 45 percent turnout in the last national elections in 2008. This impressive turnout came **despite** the **threat of violence**. More than 150 people lost their lives and scores were injured in attacks by insurgents across the country during the election campaigning period and on election day. **This brave statement** by the people of Pakistan **sends a** new **message** to the outside world **and gives hope for peace** on the Subcontinent.

In particular, **India has** a **stake in the democratic success of its neighbor**, with whom relations have been turbulent. **There is** **widespread hope** in India that **Sharif**, who formed a new Indo-Pakistani relationship in the 1990s, **will revive the peace process and improve** Islamabad’s **ties** with New Delhi.

Indian Prime minister Manmohan **Singh was one of the first** world leaders **to congratulate Sharif** after his emphatic victory. In a letter, **Singh talked about charting a new course for the relationship** between the two countries **and invited his** Pakistan **counterpart to visit** India.

**Sharif reciprocated** and emphasized the need for improved relations with India. **He** further **stressed the importance of resolving issues, including Kashmir**, through peaceful means. **He** even informally **invited the Indian premier to his inauguration** ceremony in Islamabad.

According to veteran Pakistani author and political analyst Ahmed Rashid, **circumstances may be more favorable** this time for Sharif **to improve ties** with New Delhi. He writes, “During his two premierships in the 1990s, Sharif made genuine **efforts at peace** with India but **was thwarted by an aggressive** and uncompromising **army**.” But, he continues, “**The army**—faced with a severe weakening of the state—now **seems more amenable to improving relations** with New Delhi.”

The Hindu opines that where **Sharif “gives** most **hope is in his** **strong and unambiguous** **articulation of better** India-Pakistan **relations**, though this will depend on his stated determination to correct the civil-military imbalance, and reclaim the national agenda from the security establishment. Whether he can succeed is another question, but India will be hoping he will.”

As Pakistan passes through a rough economic patch, **deeper engagement** with its immediate neighbor **will** not only **give the** volatile **country increased political stability** **but** will **also boost growth**. **India can** play a major role in **reviv**ing **Pakistan's** bankrupt **economy** as a potential investor.

According to an article published by the New Delhi-based think tank Institute for Defence Studies and Analyses (IDSA), **trade** between the two South Asian countries **could receive renewed impetus under the** new **regime**, barring complications from opposition by the religious right. However, the IDSA article also notes that “one should not expect a lot of change in policies related to terrorism targeted at India or its aversion to India’s presence in Afghanistan.”

Despite skepticism, **there is** a general mood of **optimism in India** about the regime change in Pakistan. Just a couple of weeks ago Indian media was full of anti-Pakistan stories in the wake of the attack on Indian prisoner Sarabjit Singh in a Pakistani jail. While most Indian reports were full of jingoism in their coverage of the death of Singh, **the election** has **changed the tone of** the **discourse.**

The **optimism stems from Sharif’s earlier initiatives** in the 1990s **to deepen ties with India**. In 1999, **he started a bus service** that runs **between Lahore and New Delhi**. Then Indian PM Atal Bihari Vajpayee visited Pakistan in the inaugural bus ride. This bonhomie, however, was short-lived. Later that year hostilities erupted between the two nations at the Kargil sector, when the Pakistani army crossed the Line of Control under the leadership of former military ruler Pervez Musharraf.

The new leadership in Pakistan has a very tough job at hand: alleviate the deep-seated historical fear and mistrust between the two countries.

Likewise, India will have to show maturity in understanding the changing mood and aspirations of the people of Pakistan.

New Delhi needs to recognize that **never before has there been such** an **overwhelming consensus** **for Pakistan to normalize relations** with India. If the leaderships of both countries work hard to tap this desire, **they may be able to usher in** a new era of **peace and progress** on the Subcontinent.

### No War - Deterrence

#### South Asian deterrence is stable – despite modernization, Indian policymakers will not conclude that they would have an advantage in a conventional war with Pakistan

Ladwig 15 – Walter C. Ladwig III, Lecturer in International Relations at King's College London, Ph.D. in International Relations from Merton College, Oxford, 2015 (“Indian Military Modernization and Conventional Deterrence in South Asia,” *Journal of Strategic Studies*, May 11th, Taylor & Francis Online)

Headline grabbing increases in the Indian defense budget and a high-profile military modernization program have alarmed observers who worry that these developments could undermine the conventional military balance credited with maintaining ‘ugly stability’ in South Asia. While on their face these concerns have validity, upon deeper examination, there is still good reason to continue to be optimistic about the prospects for conventional deterrence. India’s defense procurement continues to under perform, producing far less in terms of military power than its spending would suggest. Conversely, Pakistan –assisted by China and others –has prevented the emergence of sharp asymmetries in the conventional military balance and even narrowed previously existing gaps.

Modernizing or not, the Indian military is capable of bringing far less force to bear in a limited conflict with Pakistan than the pessimists realize. As a result, it is unlikely that Indian policymakers would conclude that they can either achieve strategic surprise against Pakistan or carry out highly-effective air strikes with little escalatory risk, each of which is a necessary condition for deterrence failure. Consequently, Pakistan’s justification for its current efforts to develop tactical nuclear weapons and delivery systems on security grounds lacks a firm foundation. These systems only increase the likelihood of an inadvertent nuclear exchange, while adding little to the deterrence value of Pakistan’s force posture. There may be a variety of reasons why Islamabad is expanding and diversifying its nuclear arsenal, but a rational response to the threat posed by India’s on-going military modernization is not one of them.140

#### India and Pakistan understand MAD - current escalation is dramaturgy

Ganguly 19. Samit Ganguly, March 2019, “Why the India-Pakistan Crisis Isn’t Likely to Turn Nuclear,” Foreign Affairs, <https://outline.com/9Exnh2> sean!

There’s reason to believe that the current situation is similar. Pakistan’s overweening military establishment undoubtedly harbors an extreme view of India and determines Pakistan’s policy toward its neighbor. The military, however, is not irrational. In India, although Prime Minister Narendra Modi has a jingoistic disposition, he, too, understands the risks of escalation, and he has a firm grip on the Indian military.  Another source of optimism comes from what political scientists call the “nuclear revolution,” the idea that the invention of nuclear weapons fundamentally changed the nature of war. Many strategists argue that nuclear weapons’ destructive power is so great that states understand the awful consequences that would result from using them—and avoid doing so at all costs. Indian and Pakistani strategists are no different from their counterparts elsewhere. Even Pakistani Prime Minister Imran Khan, a political neophyte, underscored the dangers of nuclear weapons in his speech addressing the crisis last week. And Modi, for all his chauvinism, has scrupulously avoided referring to India’s nuclear capabilities.  The decision by India and Pakistan to allow their jets to cross the border represents a major break with the past. Yet so far both countries have taken only limited action. Their principal aim, it appears, is what the political scientist Murray Edelman once referred to as “dramaturgy”—theatrical gestures designed to please domestic audiences. Now that both sides have gone through the motions, neither is likely to escalate any further. Peering into the nuclear abyss concentrates the mind remarkably.

### No Pakistan Attack

#### Pakistan won’t risk attack - nuke war is existential for them but not for India

Sharma 19. Saurabh Sharma, 8-28-2019, "Why Pakistan Army will never want a nuclear war with India," Financial Express, <https://www.financialexpress.com/india-news/imran-khans-nuclear-threat-is-hollow-posturing-and-should-be-ignored-expert/1687864/> sean!

So, can Pakistan afford to go on such misadventurism? Former National Security Advisory Board member Bharat Karnad believes that Imran Khan’s nuclear threat is just “a hollow posturing” which no Indian should take seriously. Karnad, a former member of Nuclear Doctrine Drafting Group, is also the author of — India’s Nuclear Policy, and Nuclear Weapons and Indian Security. He says: “Imran Khan is talking about nuclear state — it’s a kind of very hollow posturing. All this is for the consumption of the domestic market to try and convince the people that he is doing something on behalf of Kashmiris.”  Karnad said that the Pakistanis keep talking about their nuclear weapons and that any hostilities can then escalate to nuclear level. “But where are the hostilities? India has not initiated any hostilities. India has done away with Article 370 which is an internal matter? Amending any provision of the Indian constitution is our damn right. We are not going to war. We are status quoist power. Pakistan wants to change things. It can not go to war because it does not have the war making capacities. It has no economic support system, it has no money, it has very limited stores and war materials. What are they going to fight with, forget about initiating a war?”  Karnad also believes that the Pakistani Army will never opt for war as it will go extinct after nuclear conflict. Spelling out what will happen with Pakistan in case of nuclear war, the national security expert referred to the exchange ratio — which means the destruction you impose on enemy vis-v-vis the destruction you absorb. “No matter what happens, India can not be made extinct. No matter how many atom bombs are used, and Pakistanis don’t have that many. But India can make Pakistan extinct. And why? Because unfortunately for Pakistan, all their strategic corridors from north to south are very close to the Indian borders — Rawalpindi, Islamabad, Sialkot and Karachi. All we have to do is to target these places and all their economic centers will be gone.”  Karnad is clear in his view that Pakistan is not a threat, but a nuisance and Kashmir becoming a nuclear flash-point absolute “nonsense”. He, however, wondered why the Indian government was not exposing Islamabad on the UN resolution. Referring to Pakistan Prime Minister Khan’s statement that the United Nations should fulfill its promise on plebiscite, Karnad said that there was no legitimate reason to go back to the UNSC Resolution because that is now null and void. “It’s null and void for the reason that Pakistan did not then or ever comply with the pre-conditions,” he said.

### No Extinction

#### The war won't escalate or cause extinction

**Dyer 2002** (5/24, Gwinette, Hamilton Spectator, "Nuclear war a possibility over Kashmir", Lexis, WEA)

For those who do not live in the subcontinent, the most important fact is that the damage would be largely confined to the region. The Cold War is over, the strategic understandings that once tied India and Pakistan to the rival alliance systems have all been cancelled, and no outside powers would be drawn into the fighting. The detonation of a hundred or so relatively small nuclear weapons over India and Pakistan would not cause grave harm to the wider world from fallout. People over 40 have already lived through a period when the great powers conducted hundreds of nuclear tests in the atmosphere, and they are mostly still here.

## A2 Grid

### Batteries Solve

#### Batteries now solve grid

Cusick, 1-1—E&E News (Daniel, “Battery Storage Poised to Expand Rapidly,” <https://www.scientificamerican.com/article/battery-storage-poised-to-expand-rapidly/>, dml)

Thanks in part to California's crisis, but also improving economics and new state policies, the technology is preparing for unprecedented growth in the United States over the next several years. As much as 1,800 megawatts of new energy storage — mostly from lithium-ion batteries — is expected to come online by 2021, according to GTM Research, which tracks the sector for the Energy Storage Association.

That's eight times larger than total U.S. installed energy storage capacity in 2016 and should translate into nearly 5,900 megawatt-hours of stored electricity that can be dispatched quickly to address power outages, shave peak demand charges or simply enhance grid reliability, according to experts.

Energy storage is also critical to solving the intermittency challenges associated with renewable energy. That's because batteries can smooth the ebbs and flows associated with wind and solar power by supplementing the grid when those resources are not available.

“One of the trends we're seeing lately, and what could be a game-changer, is the level of utility interest and involvement,” said Anissa Dehamna, a principal research analyst and head of the energy storage team at Navigant Research. “We've had growth of a little over 200 percent [annually] in the past, and we're expecting that trend to continue in the North American market.”

#### The transition is irreversible

Cusick, 1-1—E&E News (Daniel, “Battery Storage Poised to Expand Rapidly,” <https://www.scientificamerican.com/article/battery-storage-poised-to-expand-rapidly/>, dml)

Experts agree. Energy storage — whether applied at the utility scale in California or deployed by individual businesses and homeowners for backup power and peak-shaving in states like Vermont — has emerged as a key component in the nation's clean energy transformation.

“I think this past year has been the turning point for storage,” said Lewis Milford, president of the Clean Energy Group, a nonprofit that advocates for renewables and clean tech solutions. “We've moved from a question of, 'Is this technology ready for the marketplace?' to 'How do we get enough systems out there to prove the economics of it?'”

### No Impact

#### Grid shutdown is just a nuisance—no impact

Douglas Birch 12, former foreign correspondent for the Associated Press and the Baltimore Sun who has written extensively on technology and public policy, "Forget Revolution," October 1, Foreign Policy, www.foreignpolicy.com/articles/2012/10/01/forget\_revolution?page=full

Government officials sometimes describe a kind of Hieronymus Bosch landscape when warning of the possibility of a cyber attack on the electric grid. Imagine, if you will, that the United States is blindsided by an epic hack that interrupts power for much of the Midwest and mid-Atlantic for more than a week, switching off the lights, traffic signals, computers, water pumps, and air conditioners in millions of homes, businesses, and government offices. Americans swelter in the dark. Chaos reigns! ¶ Here's another nightmare scenario: An electric grid that serves two-thirds of a billion people suddenly fails in a developing, nuclear-armed country with a rich history of ethnic and religious conflict. Rail transportation is shut down, cutting off travel to large swathes of the country, while many miners are trapped underground. ¶ Blackouts on this scale conjure images of civil unrest, overwhelmed police, crippled hospitals, darkened military bases, the gravely injured in the back of ambulances stuck in traffic jams. ¶ The specter of what Defense Secretary Leon Panetta has called a "digital Pearl Harbor" led to the creation of U.S. Cyber Command, which is tasked with developing both offensive and defensive cyber warfare capabilities, and prompted FBI Director Robert Mueller to warn in March that cyber attacks would soon be "the number one threat to our country." Similar concerns inspired both the Democrats and Republicans to sound the alarm about the cyber threat in their party platforms. ¶ But are cyber attacks really a clear and present danger to society's critical life support systems, capable of inflicting thousands of casualties? Or has fear of full-blown cybergeddon at the hands of America's enemies become just another feverish national obsession -- another of the long, dark shadows of the 9/11 attacks? ¶ Worries about a large-scale, devastating cyber attack on the United States date back several decades, but escalatedfollowing attacks on Estonian government and media websites during a diplomatic conflict with Russia in 2007. That digital ambush was followed by a cyber attack on Georgian websites a year later in the run-up to the brief shooting war between Tbilisi and Moscow, as well as allegations of a colossal, ongoing cyber espionage campaign against the United States by hackers linked to the Chinese army. ¶ Much of the concern has focused on potential attacks on the U.S. electrical grid. "If I were an attacker and I wanted to do strategic damage to the United States...I probably would sack electric power on the U.S. East Coast, maybe the West Coast, and attempt to cause a cascading effect," retired Admiral Mike McConnell said in a 2010 interview with CBS's 60 Minutes. ¶ But the scenarios sketched out above are not solely the realm of fantasy. This summer, the United States and India were hit by two massive electrical outages -- caused not by ninja cyber assault teams but by force majeure. And, for most people anyway, the results were less terrifying than imagined. ¶ First, the freak "derecho" storm that barreled across a heavily-populated swath of the eastern United States on the afternoon of June 29 knocked down trees that crushed cars, bashed holes in roofs, blocked roads, and sliced through power lines. ¶ According to an August report by the U.S. Department of Energy, 4.2 million homes and businesses lost power as a result of the storm, with the blackout stretching across 11 states and the District of Columbia. More than 1 million customers were still without power five days later, and in some areas power wasn't restored for 10 days. Reuters put the death tollat 23 people as of July 5, all killed by storms or heat stroke. ¶ The second incident occurred in late July, when 670 million people in northern India, or about 10 percent of the world's population, lost power in the largest blackout in history. The failure of this huge chunk of India's electric grid was attributed to higher-than-normal demand due to late monsoon rains, which led farmers to use more electricity in order to draw water from wells. Indian officials told the media there were no reports of deaths directly linked to the blackouts. ¶ But this cataclysmic event didn't cause widespread chaos in India -- indeed, for some, it didn't even interrupt their daily routine. "[M]any people in major cities barely noticed the disruption because localized blackouts are so common that many businesses, hospitals, offices and middle-class homes have backup diesel generators," the New York Timesreported. ¶ The most important thing about both events is what didn't happen. Planes didn't fall out of the sky. Governments didn't collapse. Thousands of people weren't killed. Despite disruption and delay, harried public officials, emergency workers, and beleaguered publics mostly muddled through.¶ The summer's blackouts strongly suggest that a cyber weapon that took down an electric grid even for several days could turn out to be little more than a weapon of mass inconvenience.¶ "Reasonable people would have expected a lot of bad things to happen" in the storm's aftermath, said Neal A. Pollard, a terrorism expert who teaches at Georgetown University and has served on the United Nation's Expert Working Group on the use of the Internet for terrorist purposes. However, he said, emergency services, hospitals, and air traffic control towers have backup systems to handle short-term disruptions in power supplies. After the derecho, Pollard noted, a generator truck even showed up in the parking lot of his supermarket.¶ The response wasn't perfect, judging by the heat-related deaths and lengthy delays in the United States in restoring power. But nor were the people without power as helpless or clueless as is sometimes assumed.¶ That doesn't mean the United States can relax. James Lewis, director of the technology program at the Center for Strategic and International Studies, believes that hackers threaten the security of U.S. utilities and industries, and recently penned an op-ed for the New York Times calling the United States "defenseless" to a cyber-assault. But he told Foreign Policy the recent derecho showed that even a large-scale blackout would not necessarily have catastrophic consequences.¶ "That's a good example of what some kind of attacks would be like," he said. "You don't want to overestimate the risks. You don't want somebody to be able to do this whenever they felt like it, which is the situation now. But this is not the end of the world."

#### The status quo solves grid reliability, which depends on dispatchable generation from nonrenewable energy

Fisher, 15—IER Economist (Travis, “ASSESSING EMERGING POLICY THREATS TO THE U.S. POWER GRID,” <http://instituteforenergyresearch.org/wp-content/uploads/2015/02/Threats-to-U.S.-Power-Grid.compressed.pdf>, dml)

Electric reliability in the U.S. is excellent overall, which is a testament to the men and women working in power plants and control rooms across the country. Aside from two major blackouts (1965 and 2003), electricity consumers in the U.S. have not been subjected to persistent, region-wide blackouts —unlike less developed nations 8 with less reliable electric systems. 9

Given the positive track record of America’s power grid, it is no surprise that some experts characterize the grid as “underrated.” According to a 2014 report 10 by the North American Electric Reliability Corporation (NERC)—which is the U.S.’s federally designated electric reliability organization—the grid remains stable:

The availability of the bulk transmission system remained high from 2008 to 2013. The [alternating current] transmission circuit availability remained above 97 percent, and transmission transformer availability was above 98 percent for the 2010 to 2013 period (unavailability includes both forced and planned outages). High transmission availability demonstrates that the [bulk power system] is able to perform reliably over a variety of operating conditions.11

This report focuses on the power plants and high-voltage transmission lines that make up the bulk power grid. Even with a top- 12 notch bulk power grid covering the U.S., consumers will experience outages on local distribution lines from time to time. This is 13 due largely to the fact that many of our neighborhood power lines are on overhead poles and thus vulnerable to damage from storms, ice, falling trees, etc. The alternative —burying distribution lines underground—is impractical and would be incredibly expensive. For the purposes of this report, 14 statements about grid reliability refer to the bulk power grid.

The U.S. power grid actually consists of three region-wide interconnections: the Eastern Interconnection, the Western Interconnection, and the Texas Interconnection. When we refer to the American power grid, we refer to these interconnections collectively, with a special focus on their generation and transmission infrastructure.

To keep these interconnections up and running (and to keep the lights on), electricity generators must meet the total demand on the system at all times and do so within tight margins of error. Electricity is a unique good in that it must be produced at the moment it is consumed, and grid supply must match demand during every second of every day. As people demand higher or lower amounts of power throughout the day (shown below), reliable generators adjust their output accordingly. “Baseload” plants run consistently at nearly all hours, whereas other plants come online to satisfy higher levels of demand or “load.” Having a reliable grid means matching supply to demand in real time, all the time.

The technology that makes large electricity grids possible in the first place—the alternating current (AC) system—presents some operating challenges. For example, in an AC system, all generators and devices running on the grid are synchronized to the same frequency (in the U.S., grid current alternates at 60 cycles per second or 60 hertz). If demand outstrips supply (or vice versa), the whole system experiences a dangerous drag (or boost) in frequency that can cause blackouts across a large area. Diverging from 60 hertz is dangerous for some of the equipment on the grid, including generators, so power plants will shut themselves off when the frequency changes too much.

For example, in the 2003 blackout that spread across the Eastern U.S., grid operators were slow to realize that a generator had failed and transmission lines had tripped offline, causing other transmission lines to overload, which, in turn, caused other generators to trip offline, further losing power and exacerbating the frequency collapse.

The cascading effect continued until much of the Eastern U.S. and Canada suffered a major blackout. The 2003 blackout 15 demonstrated that, even in good conditions, the power grid is susceptible to system-wide disruptions.

To understand how fragile the balance of the grid truly is—and how well operators manage the grid—look no further than the second-by-second frequency fluctuations across the three interconnections.

Below is a screen capture of the real-time, color-coded frequency map maintained by the Power Information Technology Laboratory at the University of Tennessee.16 Blue areas are experiencing lower grid frequency (less than 60 hertz), indicating that overall electricity supply is lagging demand in that moment, and red areas are the opposite. Green areas indicate that the system is balanced at 60 hertz.

These conditions change in real time, cycling second-by-second through the rainbow of colors. As total demand on the system changes (as lights, electric motors, air conditioners, computers, etc. turn on and off), hundreds of generators respond by increasing or decreasing their power output at a moment’s notice. The blues and reds reflect the fact that generators require some reaction time to respond to changing power demand. Minor deviations in frequency are normal—extreme deviations or “frequency excursions” can cause serious reliability problems.17

Grid planners and operators go to great lengths to make sure the grid’s delicate supply/demand balance is stable, not just minute to minute, but also five and ten years into the future. In those long-range plans, having enough reliable supply to meet demand in many different situations is key. Planners pay special attention to peak demand forecasts, ensuring there will always be enough reliable generation to match demand at its highest. The buffer or cushion above peak demand provided by reliable sources of electricity is called the “reserve margin,” and it is absolutely crucial in grid planning. Planners also take into account the potential loss of equipment such as transmission lines, substations, generators, and so on. That is why this report stresses the importance of having enough reliable generators up and running.

The U.S. Energy Information Administration (EIA) is careful to distinguish between “dispatchable” generation—power plants that can be controlled, i.e., turned on and off, ramped up and down—and nondispatchable generation. In the U.S., 18 power plants fueled by coal, natural gas, and nuclear power are the largest sources of dispatchable generation. Nondispatchable sources include wind, solar, and hydroelectric power. This distinction is 19 important because dispatchable generation is absolutely essential to grid reliability.

According to the most recent data from the EIA, the U.S. is home to an amazing 875 gigawatts (GW) of dispatchable generation from coal, natural gas, petroleum, and nuclear power. That is more installed 20 capacity than all of Central and South America, Eurasia, and the Middle East combined.21

### No Solar Flares

#### Solar flares don’t wreck grid

**Lovett 12**—quoting Tom Bogdan, Ph.D. in Physics from UChicago, Director of the National Oceanic and Atmospheric Administration’s Space Environment Center – AND – Rodney Viereck, Leader of the Data and Instrumentation Group Research Division NOAA Space Environment Center (Richard, National Geographic News, March 8, 2012, <http://news.nationalgeographic.com/news/2012/03/120308-solar-flare-storm-sun-space-weather-science-aurora/>, ZBurdette)

Even now, the center's Bogdan said, the most damaging emissions from big storms travel slowly enough to be detected by sun-watching satellites **well before** the particles strike Earth. "That gives us [about] 20 hours to determine what actions we need to take," Viereck said. (Related pictures: "Multicolored Auroras Sparked by Double Sun Blast" [August 2011].) In a pinch, power companies could protect valuable transformers by taking them offline before the storm strikes. That would produce local blackouts, but they wouldn't last for long. "The good news is that these storms tend to pass after a couple of hours," Bogdan added. Meanwhile, scientists are scrambling to learn everything they can about the sun in an effort to produce even longer-range forecasts.

### No Meltdowns

#### No meltdowns and no impact to them

Arthur T. Bradley 2-21-2016; Ph.D in electrical engineering, works at NASA, author of the Handbook to Practical Disaster Preparedness for the Family, 3rd Edition, Prepper’s Instruction Manual: 50 Steps to Prepare for any Disaster Would a Long-Term Blackout Mean Nuclear Meltdown? <http://thesurvivalmom.com/long-term-blackout-nuclear-meltdown/>

Worst-case power-loss scenario With backup systems to the backup systems, it would seem that there’s nothing to worry about, right? Under all but the direst of circumstances, I think that assessment is correct. However, one could imagine a scenario in which the grid was lost and the diesel generators ran out of fuel. Speaking of fuel, how much is actually stored onsite? It depends on the plant, but at the Watts Bar Nuclear Plant, for example, there is enough fuel to run the emergency diesel generators for at least 42 days. I say at least because it would depend on exactly what was being powered. Once the reactor was cooled down, a much smaller system, known as the Residual Heat Removal System, would be all that was required to keep the fuel assemblies cool, both in the reactor and the spent fuel rods pool. The generators and onsite fuel supply could power that smaller cooling system for significantly longer than if they were powering the larger reactor cooling system. Even if we assumed a worst case of 42 days, it’s hard to imagine a scenario in which that would not be enough time to bring in additional fuel either by land, water, or air. Nonetheless, let’s push the question a little further. What would happen in the unlikely event that the diesel fuel was exhausted? Even with the reactor having been successfully cooled, the biggest risk would continue to be overheating of the fuel rod assemblies, both in the reactor and the spent fuel rods pool. Without circulation, the heat from the fuel rod assemblies could boil the surrounding water, resulting in steam. In turn, the water levels would drop, ultimately exposing the fuel rods to air. Once exposed to air, their temperatures would rise but not to the levels that would melt the zirconium cladding. Thankfully, that means that meltdown would not occur. The steam might well carry radioactive contaminants into the air, but there would be no release of hydrogen and, thus, no subsequent explosions. The situation would certainly be dangerous to surrounding communities, but it wouldn’t be the nuclear Armageddon that many people worry about.

#### No meltdowns impact, and evacuation solves

Tiffany Kaiser 11, writer for Daily Tech, citing Nuclear Regulatory Commission Report, 8/2/2011, DailyTech, "NRC: Far Fewer People Would Die in a U.S. Nuclear Meltdown Than Previously Thought," http://www.dailytech.com/NRC+Far+Fewer+People+Would+Die+in+a+US+Nuclear+Meltdown+Than+Previously+Thought/article22330.htm

The nuclear crisis at Fukushima Daiichi in Japan has caused a nuclear frenzy where leaders around the world are questioning the safety of their plants. For instance, French President Nicolas Sarkozy called for global nuclear review after visiting Japan, and U.S. senators demanded that the Nuclear Regulatory Commission (NRC) repeat an expensive inspection of the country's nuclear power.¶ But now, the NRC is close to completing a large nuclear study that may ease a few worried minds.¶ The NRC has been working with Sandia National Laboratories (a Department of Energy lab) on a study that revises previous projections of how quickly and how much cesium 137, which is a radioactive material made when uranium is split, could release from a plant after a nuclear core meltdown. The NRC has been working on the study for six years, and it will not be completely finished until next spring. But the nuclear watchdog group, Union of Concerned Scientists, has obtained an early copy of the report through a Freedom of Information Act request.¶ The new study is based on how much and how quickly cesium 137 could escape an American nuclear plant if a total blackout were to occur. A total blackout means complete loss of power from the grid, and backup diesel generators and batteries have failed as well. This leads to a nuclear meltdown. NRC scientists said that a total blackout would be rare at an American plant, but it is better to be safe than sorry. In addition, the NRC wanted to update previous projections related to cesium 137.¶ The NRC focused on two different types of reactors in the U.S.: the Peach Bottom Atomic Power Station in Pennsylvania, which has boiling-water reactors like Fukushima Daiichi, and the Surry Power Station in Virginia, which has pressurized-water reactors. Over 100 different plants were studied. Through computer models and engineering analyses, the NRC has concluded that the meltdown of a typical American reactor would lead to "far fewer deaths" than previously thought.¶ According to the new study, only 1 to 2 percent of a reactor core's cesium 137 could escape during a total blackout. Previous NRC estimates concluded that 60 percent of the cesium inventory could escape.¶ In addition, the new study found that one person in every 4,348 within a 10-mile radius of a nuclear meltdown would develop a "latent cancer" from radiation exposure. In previous estimates, it was one person in every 167.¶ The NRC said that large releases of radioactive material would not be "immediate," meaning that people within a 10-mile radius would have plenty of time to evacuate the premises. It concluded that the chance of death from acute radiation exposure within a 10-mile radius would be near zero, but some would be exposed to high enough doses to experience fatal cancers decades later.¶ "Accidents progress more slowly, in some cases much more slowly, than previously assumed," said Charles G. Tinkler, a senior adviser for research on severe accidents and an author of the study. "Releases are smaller, and in some cases much smaller, of certain key radioactive materials."

## A2 Drones

### No Arms Race

#### No arms race—even Zenko agrees

Zenko, Douglas Dillon fellow in the Center for Preventive Action – CFR, ‘13

(Micah, “U.S. Drone Strike Policies”, Council Special Report No. 65, January)

There are also few examples of armed drone sales by other countries. After the United States, Israel has the most developed and varied drone capabilities; according to the Stockholm International Peace Research Institute (SIPRI), Israel was responsible for 41 percent of drones exported between 2001 and 2011.57 While Israel has used armed drones in the Palestinian territories and is not a member of the MTCR, it has pre- dominantly sold surveillance drones that lack hard points and electrical engineering. Israel reportedly sold the Harop, a short-range attack drone, to France, Germany, Turkey, and India. Furthermore, Israel allows the United States to veto transfers of weapons with U.S.-origin technology to select states, including China.58 Other states invested in developing and selling surveillance drones have reportedly refrained from selling fully armed versions. For example, the UAE spent five years building the armed United-40 drone with an associated Namrod missile, but there have been no reported deliveries.59 A March 2011 analysis by the mar- keting research firm Lucintel projected that a “fully developed [armed drone] product will take another decade.”60 Based on current trends, it is unlikely that most states will have, within ten years, the complete system architecture required to carry out distant drone strikes that would be harmful to U.S. national interests. However, those candidates able to obtain this technology will most likely be states with the financial resources to purchase or the industrial base to manufacture tactical short-range armed drones with limited firepower that lack the precision of U.S. laser-guided munitions; the intelligence collection and military command-and-control capabilities needed to deploy drones via line-of-sight communications; and cross- border adversaries who currently face attacks or the threat of attacks by manned aircraft, such as Israel into Lebanon, Egypt, or Syria; Russia into Georgia or Azerbaijan; Turkey into Iraq; and Saudi Arabia into Yemen. When compared to distant U.S. drone strikes, these contingen- cies do not require system-wide infrastructure and host-state support. Given the costs to conduct manned-aircraft strikes with minimal threat to pilots, it is questionable whether states will undertake the significant investment required for armed drones in the near term.

### No Escalation

#### No risk of runaway drone norms

**Lewis and Crawford 2013** – \*Professor of Law at Ohio Northern University Pettit College of Law , \*\* PhD, post-doctoral fellow and associate at the Sydney Centre for International Law (Michael and Emily, Georgetown Journal of International Law, “DRONES AND DISTINCTION: HOW IHL ENCOURAGED THE RISE OF DRONES”, http://www.law.georgetown.edu/academics/law-journals/gjil/recent/upload/zsx00313001127.PDF)

Before discussing the legal merits of the norms that the United States is shaping through its present conduct of drone warfare, it is first necessary to dispel a **pervasive misconception about drones** that Alston and many other commentators have promulgated. That misconception is that the current manner in which the United States is using drones broadly justifies any use of drones by other countries against the United States and that drones represent a serious threat to the United States. 159 This misconception has spread so easily because the reciprocity theme is intuitively appealing and, to a point, legally correct. It is true that whatever legal basis the United States offers for utilizing drones in Yemen, Pakistan, or Somalia must also be available to any other nation wishing to use drones as well. However, that does not mean that drones will be appearing over New York City anytime soon, in large part because drones are very vulnerable to air defense systems and signal interruption and because they are particularly unsuited to use by terror groups. 160 Even the most advanced drones that the United States possesses are relatively slow and vulnerable to fighters or surface-to-air missiles, meaning that, as conventional weapons, drones would have limited utility in a traditional state-on-state armed conflict. 161 Perhaps more importantly, the physical realities associated with using drones makes them of limited usefulness to terrorists. Drones that are capable of carrying any significant payload need hard surfaced runways and significant maintenance support. Any drone returning to such facilities would be closely followed by U.S. forces, meaning that any drone used by terrorists would be a single strike proposition, and quite an expensive one at that. Therefore, from a practical standpoint, car bombs, suicide bombs, and attacks on airliners remain by far the most credible threat to the United States, regardless of how it pursues its drone policy. But the misconceptions concerning drones are **not limited to the practical effects** of U.S. drone policy. Legally, the United States’ position is not one of “ever-expanding entitlement for itself to target individuals across the globe.” 162 The “entitlement” to use drones, just like the entitlement to engage in any other action on the sovereign territory of another state, is largely based upon the consent of the nation in which drones are being used. It is clear that Yemen consented to the strikes undertaken on its territory. 163 This is supported by the WikiLeaks release of cables indicating Yemeni government consent for the actions taken there. 164 Likewise, there is evidence that the Pakistani government has privately consented to most of the strikes that the States had conducted on its territory. 165 To the extent that the norm being shaped by U.S. behavior is limited to cases of consent, it is hard to see how the United States will one day be disadvantaged by that norm. Outside of situations in which the host state consents to the strike, the United States has only asserted an “entitlement” to target al Qaeda in situations where the host state has proven itself to be unable or unwilling to incapacitate or expel al Qaeda from its territory. 166 It has long been established that states not involved in armed conflicts have a responsibility not to aid either belligerent. 167 The United States’ position that the law of armed conflict allows it to conduct proportional strikes against al Qaeda targets within states that have proven themselves to be unable or unwilling to incapacitate or expel those targets cannot be fairly characterized as creating an “ever-expanding entitlement for itself to target individuals across the globe.” 168

# Terror

## No Nuclear Terror

#### Nuclear terrorism is fearmongering - no terrorist group has even considered it and there’s no incentive

**B**ulletin of the **A**tomic **S**cientists **15**, The Bulletin of the Atomic Scientists is a nontechnical academic journal that covers global security and public policy issues related to the dangers posed by nuclear and other weapons of mass destruction, climate change, and emerging technologies and diseases, 2/15, “On fear and nuclear terrorism,” Volume 71, Issue 2

Fear of nuclear weapons is rational, but its extension to terrorism has been a vehicle for fear-mongering that is unjustified by available data. The debate on nuclear terrorism tends to distract from events that raise the risk of nuclear war, the consequences of which would far exceed the results of terrorist attacks. And the historical record shows that the war risk is real. The Cuban Missile Crisis and other confrontations have demonstrated that miscalculation, misinterpretation, and misinformation could lead to a “close call” regarding nuclear war. Although there has been much commentary on the interest that Osama bin Laden, when he was alive, reportedly expressed in obtaining nuclear weapons, evidence of any terrorist group working seriously toward the theft of nuclear weapons or the acquisition of such weapons by other means is virtually nonexistent. The acquisition of nuclear weapons by terrorists requires significant time, planning, resources, and expertise, with no guarantees that an acquired device would work. It requires putting aside at least some aspects of a group’s more immediate activities and goals for an attempted operation that no terrorist group has accomplished. While absence of evidence does not mean evidence of absence, it is reasonable to conclude that the fear of nuclear terrorism has swamped realistic consideration of the threat.

#### Building a nuke is way too hard for terrorists – they’ve gotten the material and just threw it away

Ward 18. Antonia Ward (a national security analyst who has written about terrorism for RAND and the National Interest), July 2018, "Is Nuclear Terrorism Distracting Attention from More Realistic Threats?," RAND Corporation, https://www.rand.org/blog/2018/07/is-the-threat-of-nuclear-terrorism-distracting-attention.html sean!

In 2014, after capturing the Iraqi city of Mosul, ISIS had access to two caches of Cobalt 60 locked in a storage room at Mosul University. This material has lethal levels of radiation, is used to treat cancer cells, and is the core ingredient of a nuclear bomb. Government officials and nuclear experts speculated that ISIS failed to utilize it, because they could not determine how to access [it] the Cobalt 60 without exposing themselves to deadly radiation. In 2016, after the two ISIS brothers involved in the Brussels bombings, Khalid and Ibrahim el-Bakraoui, were killed and captured, authorities discovered they had been secretly watching a Belgian nuclear scientist who worked at the Tihange Nuclear Power Station with the potential aim of using material from this facility. Nuclear terrorism is a concern, but the majority of terror attacks are conducted with conventional explosives. Despite Obama's remarks in 2016 and these two incidents, experts and officials contest the viability of the nuclear terrorism threat. Dr Beyza Unal, a research fellow in nuclear policy at think tank Chatham House, argued there is currently no evidence that terrorist groups could build a nuclear weapon. Similarly, a report by the Council on Foreign Relations in 2006 emphasized how building a nuclear bomb is a difficult task for states, let alone terrorists. This is because of the issues involved in accessing uranium and creating and maintaining it at the correct grade (enriched uranium). While nuclear terrorism is a concern, the majority of terrorist attacks are conducted with conventional explosives. The 2017 Europol Terrorism Situation and Trend Report states that 40 percent of terrorist attacks used explosives. These explosives originate from a wide variety of countries across the world. According to a study by Conflict Armament Research, large quantities of explosive precursor chemicals used to make bombs as seen in the 7/7 attack in London in 2005 and the 2017 Manchester Arena attack, have been linked to supply chains in the United States, Europe, and Asia via Turkey. The threat from the spread of chemical precursors prompted the EU to begin looking at ways to tighten the regulations of these chemicals (PDF). A nuclear terrorist attack would have grave consequences, but it is currently not a realistic or viable threat given that it would require a level of sophistication from terrorists that has not yet been witnessed. The recent focus of terrorist groups has been on simplistic strikes, such as knife and vehicular attacks. If countries are concerned about nuclear terrorism, the best way to mitigate this risk could be to tighten security at civilian and government nuclear sites. But governments would be better off focusing their efforts on combatting the spread and use of conventional weapons.

# Warming

## Defense

### No Impact

**No impact**

**Shani ’15** (Amir Shani – PhD @ the University of Central Florida, researches ecotourism and ethics at the University of the Negev, Eilat Campus. Boaz Arad – spokesman in the Public Policy Center at the Jerusalem Institute for Market Studies, “There is always time for rational skepticism: Reply to Hall et al,” April 2015, ScienceDirect)

The uncertainty that encompasses current climate change assessments is strengthened in light of the studies indicating that over earth's history there have been **distinct warm periods** with temperatures **exceeding the current ones** (Esper et al., 2012, McIntyre and McKittrick, 2003 and Soon and Baliunas, 2003). Reviewing the relevant scientific literature, Khandekar, Murty, and Chittibabu (2005) concluded that “in the context of the earth's climate through the last 500 million years, the recent (1975–2000) increase in the earth's mean temperature does not appear to be **unusual** or **unprecedented** as claimed by IPCC and many supporters of the global warming hypothesis” (p. 1568). Other studies challenged the mainstream climate change narrative, according to which CO2 levels in the earth's atmosphere play a prominent role in rising temperatures. One notable example is the research by Shaviv and Veizer (2003), which demonstrates that the earth's temperature correlates well with variations in cosmic ray flux, rather than changes in atmospheric CO2. These findings and others stir contentious debates within the climate scientific community, but are nevertheless largely overlooked by the IPCC, which ignores alternative explanations for climate change. Regrettably, Hall et al. scornfully dismiss this evidence, presented in our research note, based on cherry-picking of a few “non-peer-reviewed” references that were cited, some vague claims about “misreading” and “selective citing,” as well as other semantic nitpicking. 4. Impacts of climate change The IPCC warns that climate change is likely to have severe consequences, particularly for poor countries, such as increased hunger, water shortages, vulnerability to extreme weather events and debilitating diseases. **However**, these estimations have been **heavily criticized** for failing to properly account for **substantial improvements in adaptive capacity** (i.e., the capability of coping with the impact of global warming) that are likely to occur due to advances in **economic development**, **technological change** and **human capital** over the next century (Goklany, 2007). Fostering economic growth and technological development, largely achievable through the use of fossil fuels, will strengthen both industrialized and developing countries' **adaptive capacity** to deal not just with possible future climate change consequences, but also with other environmental and public health problems. Such policy will **provide greater benefits** at lower costs than drastic climate change mitigation efforts involving substantially cutting greenhouse gas emissions (Goklany, 2004 and Goklany, 2012). Furthermore, the analyses of Galiana and Green (2009) exemplify that in the current state of energy technologies, the suggested plans for ambitious emission reductions will likely severely clobber the global economy, especially in view of present economic conditions. In order to stabilize atmospheric CO2 at accepted levels, there is a need for enormous advances in efficient energy technology, which is currently missing (Pielke, Wigley & Green, 2008). In any case, **even if** every industrialized nation meets the most ambitious emissions targets set by the Kyoto Protocol, such efforts are likely to have **little effect**, particularly in the light of the considerable increases in greenhouse gas emissions by rising economic superpowers as **China** and **India**, as well as the **remaining developing world** (Wigley, 1998). Hall et al. criticized us for choosing “selective citations…that discuss natural processes potentially affect climate in specific locations and times.” Yet the purpose of referring to such studies was to refute the claims made by the IPCC and other climate change alarmists to the effect that recent extreme weather events (e.g., floods, droughts and storms) are the consequences of anthropogenic emissions of greenhouse gases. Moreover, data shows that despite claims that the number and intensity of extreme weather has increased, between 1900 and 2010 the average annual death and death rates from extreme weather events has declined by 93% and 98%, respectively (Goklany, 2009). This is mostly due to economic and technological factors, such as improved global food production, increase globalized food trade and better disaster preparedness. IPCC's exaggerated estimations of climate change impacts were also noted in an op-ed in Financial Times written by climate economist Richard Tol (2014), a week following his demand that his name as one of the leading authors be removed from the IPCC's AR5 due to its over alarmist assessments of the impacts of AGW and underestimation of humanity's adaptive capacity. As concluded by Tol, “Humans are a **tough** and **adaptable** species. People live on the equator and in the Arctic, in the desert and in the rainforest. **We survived ice ages** with **primitive technologies**. The idea that climate change poses an existential threat to humankind is **laughable**” (2014, para 1).

#### Warming is slow and no impact

Ridley 15 (Matt, fellow of the Royal Society of Literature and of the Academy of Medical Sciences, and a foreign honorary member of the American Academy of Arts and Sciences, member of Science and Technology select committee in the House of Lords, worked for the Economist for 9 years as a Science Editor, “Why climate policies are doing more harm than climate change” http://www.rationaloptimist.com/blog/paris-climate-conference/)

This year looks likely to be a lot warmer than last, though still not as warm in both standard satellite data sets as 1998, the last time that a strong El Nino in the Pacific Ocean boosted the global air temperature a lot (surface thermometers sets say it will be warmer than 1998, once adjusted in various ways). The average trend over the past 35 years is 0.1 degrees of warming per decade according to the satellite data, less than 0.2 per decade according to the surface thermometers. Neither trend is fast enough to produce significantly dangerous climate change even by the latter part of this century. The warming has been much slower than was predicted when the scare began. Nor is it evenly spread. The Antarctic continent has warmed hardly at all, and the entire southern hemisphere has warmed about half as fast as the northern. The Arctic has warmed more than the tropics, night has warmed more than day and winter has warmed more than summer. Cities have warmed faster than the countryside, but that’s because of local warming factors, not global ones: buildings, vehicles, industry, pavements and people trap warmth. How unusual is today’s temperature? As I did this weekend, you have no doubt had conversations along the following lines recently: “Hasn’t it been mild? End of November and we’ve hardly had a frost yet!” All true. But then be honest: can you not recall such conversations throughout your life? I can. And here’s what the Met Office had to say about November 1938, long before I was born: “The weather of the month was distinguished by exceptional mildness: at numerous places it was the mildest November on record.” In 1953, November was even milder and there was no air frost recorded in Oxford in the last four months of the year at all. I am not saying it has not generally become warmer, but that the variation dwarfs the trend. Let’s go back a little further, to the Middle Ages. It used to be argued by some that the “Medieval Warm Period” of about a thousand years ago, when mountain glaciers retreated, vines grew further north and Iceland was widely cultivated, was confined to Europe. We now know from multiple sources of evidence that it was global. Tree lines were higher than today in many mountain ranges, for example. Both North Pacific and Antarctic Ocean water temperatures were 0.65C warmer than today. Go back yet further, still within the current interglacial period, to the so-called Holocene Optimum of 6,000-9,000 years ago. Ocean temperatures were up to two degrees warmer than today, the Arctic Ocean was nearly or completely ice-free at the end of summer in many years, and the boreal forest in Siberia extended 150 miles further north than today. July temperatures were up to six degrees warmer than today in the Siberian Arctic. Was this Holocene Optimum a horrible time of droughts, storms, disease and famine? Not especially. It was the period when agriculture spread rapidly across the globe from five or seven centres of invention. Abundant rainfall in Africa led to lakes in the Sahara with crocodiles and hippos in them, surrounded by green vegetation in the monsoon season. Today’s gentle warming, progressing much more slowly than expected, is also accompanied by generally improving conditions. Globally, droughts are declining very slightly. Storms are not increasing in frequency or intensity: this year has been one of the quietest hurricane seasons. Floods are worse in some places but usually because of land-use changes, not more rainfall. Death rates from floods, storms and droughts have plummeted and are now far lower than they were a century ago. Today, arid areas like western Australia or the Sahel region of Africa are getting generally greener, thanks to the effect of more carbon dioxide in the air, which makes plants grow faster and resist drought better.

**No impact to warming**

**Hart 15** – Michael Hart, Simon Reisman Chair at the Norman Paterson School of International Affairs at Carleton University in Ottawa, Former Fulbright-Woodrow Wilson Center Visiting Research, Former Scholar-in-Residence in the School of International Service and Senior Fellow in the Center for North American Studies at American University in Washington, a former official in Canada’s Department of Foreign Affairs and International Trade, where he Specialized in trade policy and trade negotiations, MA from the University of Toronto, “Hubris: The Troubling Science, Economics, and Politics of Climate Change”, p. 242-246

As already noted, the IPCC scenarios themselves **are wildly alarmist**, not only on the basic science but also on the **underlying** economic **assumptions**, which in turn drive the alarmist impacts. The result **cannot withstand critical analysis**. Economists Ian Castles and David Henderson, for example, show the extent to which the analysis is driven by the desire to reach predetermined outcomes.50 Other economists have similarly wondered what purpose was served by pursuing such unrealistic scenarios. It is hard to credit the defense put forward by Mike Hulme, one of the creators of the scenarios, that the IPCC is not engaged in forecasting the future but in creating “plausible” story lines of what might happen under various scenarios.51 Each **scare scenario** is based on linear projections without **any reference to technological developments or adaptation**. If, on a similar linear basis, our Victorian ancestors in the UK, worried about rapid urbanization and population growth in London, had made similar projections, they would have pointed to the looming crisis arising from reliance on horse-drawn carriages and omnibuses; they would have concluded that by the middle of the 20th century, London would be knee-deep in horse manure, and all of the southern counties would be required to grow the oats and hay to feed and bed the required number of horses. Technology progressed and London adapted. **Why should the rest of humanity not be able to do likewise** in the face of a trivial rise in temperature over the course of more than a century? The work on physical impacts is **equally over the top**. All the scenarios assume **only negative impacts**, ignore the reality of **adaptation**, and attribute **any and all things bad** to global warming. Assuming the GHG theory to be correct means that its impact would be most evident at night and during the winter in reducing atmospheric heat loss to outer space.52 It would have greater impact in increasing minimum temperatures than in increasing maximum temperatures. Secondary studies, however, generally **ignore this facet** of the hypothesis. The IPCC believes that a warmer world will harm human health due, for example, to increased disease, malnutrition, heat-waves, floods, storms, and cardiovascular incidents. As already noted **there is no basis for the claim about severe-weather-related threats or malnutrition**. The claim about heat-related deaths gained a boost during the summer of 2003 because of the tragedy of some 15,000 alleged heat-related deaths in France as elderly people stayed behind in city apartments without air conditioning while their children enjoyed the heat at the sea shore during the August vacation. Epidemiological studies of so-called "excess" deaths resulting from heat waves are abused to get the desired results. Similar studies of the impact of cold spells show that they are far more lethal than heat waves and that it is much easier to adapt to heat than to cold.53 More fundamentally, this, like most of the alarmist literature, ignores the basics of the AGW hypothesis: the world will not see an exponential increase in summer, daytime heat (and thus more heat waves), but a decrease in night-time and winter cooling, particularly at higher latitudes and altitudes. Based on the AGW hypothesis, Canada, China, Korea, Northern Europe, Australia, New Zealand, South Africa, Chile, and Argentina will see warmer winters and warmer nights. There are clear benefits to such a development, even if there may also be problems, but the AGW industry tends to ignore the positive aspects of their alarmist scenarios. The feared spread of malaria, a much repeated claim, is largely unrelated to climate. Malaria’s worst recorded outbreak **was in Siberia long before there was any discussion of AGW**. Similarly, the building of the Rideau Canal in Ottawa in the 1820s was severely hampered by outbreaks of malaria due to the proximity of mosquito-infested wetlands in the area. Malaria remains widespread in tropical countries today in part because of the UN’s lengthy embargo on the use of DDT, the legacy of an earlier alarmist disaster. Temperature is but one factor, and a minor one at that, in the multiple factors that affect the rise or decline in the presence of disease-spreading mosquitoes. Wealthier western countries have pursued public health strategies that have reduced the incidence of the dis- ease in their countries. Entomologist Paul Reiter, widely recognized as the leading specialist on malaria vectors and a contributor to some of the early work of the IPCC, was aghast to learn how his careful and systematic analysis of the potential impacts had been twisted in ways that he could not endorse. In a recent paper, he concludes: “Simplistic reasoning on the future prevalence of malaria is ill-founded; malaria is not limited by climate in most temperate regions, nor in the tropics, and in nearly all cases, ’new' malaria at high altitudes is well below the maximum altitudinal limits for transmission. Future changes in climate may alter the prevalence and incidence of the disease, but obsessive emphasis on ’global warming' as a dominant parameter is indefensible; the principal determinants are linked to ecological and societal change, politics and economics.”54 **Catastrophic species loss** similarly has **little foundation in past experience**.55 Even if the GHG hypothesis were to be correct, **its impact would be slow**, **providing significant scope and opportunity for adaptation**, including by ﬂora and fauna. One of the more irresponsible claims was made by a group of UK modelers who fed wildly improbable scenarios and data into their computers and produced the much-touted claim of massive species loss by the end of the century. There are literally **thousands of websites devoted to spreading alarm about species loss** and biodiversity. Global warming is **but one of many claimed human threats to the planet’s biodiversity**. The claims, fortunately, are largely hype, based on computer models and the estimate by Harvard naturalist Edward O. Wilson that 27,000 to 100,000 species are lost annually - a figure he advanced purely hypothetically but which has become one of the most persistent of environmental urban myths. The fact is that scientists **have no idea of the extent of the world's ﬂora and fauna**, with estimates ranging from five million to 100 million species, and that there are no reliable data about the rate of loss. By some estimates, 95 per cent of the species that ever existed have been lost over the eons, most before humans became major players in altering their environment. A much more credible estimate of recent species loss comes from a surprising source, the UN Environmental Program. It reports that known **species loss is slowing reaching its lowest level in 500 years** in the last three decades of the 20th century, with some 20 reported extinctions despite increasing pressure on the biosphere from growing human population and industrialization.57 The alarmist community has also introduced the scientifically unknown concept of "locally extinct,” often meaning little more than that a species of plant or animal has responded to adverse conditions by moving to more hospitable circumstances, e.g., birds or butterflies becoming more numerous north of their range and disappearing at its extreme southern extent. Idso et al. conclude: “Many species have shown the ability to **adapt rapidly to changes in climate**. Claims that global warming threatens large numbers of species with **extinction** typically rest on a false definition of extinction (the loss of a particular population rather than en- tire species) and **speculation rather than real-world evidence**. The world’s species have proven **very resilient**, having survived past natural climate cycles that involved much greater warming and higher C02 concentrations than exist today or are likely to exist in the coming centuries?“

**No mass extinction from warming – fossil record proves**

**Willis 10** – PhD in Plant Science @ Cambridge, Professor of Biodiversity in the Department of Zoology, University of Oxford, and an adjunct Professor in Biology at the University of Bergen. She holds the Tasso Leventis Chair of Biodiversity at Oxford and was founding Director, now Associate Director, of the Biodiversity Institute Oxford

(Kathy, Keith D. Bennett, Shonil A. Bhagwat& H. John B. Birks, “4 °C and beyond: what did this mean for biodiversity in the past?,” Systematics and Biodiversity, 8.1)

The most recent climate models and fossil evidence for the early Eocene Climatic Optimum (53–51 million years ago) indicate that during this time interval atmospheric CO2 would have exceeded 1200ppmv and tropical temperatures were between 5–10 ◦ C warmer than modern values (Zachos et al., 2008). There is also evidence for relatively rapid intervals of extreme global warmth and massive carbon addition when global temperatures increased by 5 ◦ C in less than 10 000 years (Zachos et al., 2001). So what was the response of biota to these ‘climate extremes’ and do we see the large-scale extinctions (especially in the Neotropics) predicted by some of the most recent models associated with future climate changes (Huntingford et al., 2008)? In fact the fossil record for the early Eocene Climatic Optimum demonstrates the very opposite. All the evidence from low-latitude records indicates that, at least in the plant fossil record, this was one of the most biodiverse intervals of time in the Neotropics(Jaramillo et al., 2006). It was also a time when the tropical forest biome was the most extensive in Earth’s history, extending to mid-latitudes in both the northern and southern hemispheres – and there was also no ice at the Poles and Antarctica was covered by needle-leaved forest (Morley, 2007). There were certainly novel ecosystems, and an increase in community turnover with a mixture of tropical and temperate species in mid latitudes and plants persisting in areas that are currently polar deserts. [It should be noted; however, that at the earlier Palaeocene–Eocene Thermal Maximum (PETM) at 55.8 million years ago in the US Gulf Coast, there was a rapid vegetation response to climate change. There was major compositional turnover, palynological richness decreased, and regional extinctions occurred (Harrington & Jaramillo, 2007). Reasons for these changes are unclear, but they may have resulted from continental drying, negative feedbacks on vegetation to changing CO2 (assuming that CO2 changed during the PETM), rapid cooling immediately after the PETM, or subtle changes in plant–animal interactions (Harrington & Jaramillo, 2007).]

#### No extinction.

Thomas 15—Associate Professor of history (specializing in nature and environmental history) at the University of Notre Dame [Julia Adeney, “Who is the “we” Endangered by Climate Change?” in Fernando Vidal & Nélia Dias (eds.) *Endangerment, Biodiversity and Culture*, p. 241]

Up to this point, the biologist and the historian describe the planetary situation in homologous terms and name the human species as the culprit of climate change. But there the similarities end. For Stager, thinking in terms of the species is easy, and his general argument is that most species, including ours, will survive pretty well, especially if we allow for migration. Looking back on the Eocene era 55 million years ago, which produced temperatures 18–22°F higher than today’s, Stager maintains that the Paleocene-Eocene Thermal Maximum (PETM) was not so very terrible: “On a relatively bright note, we also know that many plants and animals, including our own primate ancestors, made it through PETM just fine.”12 This depends, of course, on how you define “just fine.” Looking forward into the deep future, Stager explores two models of climate change: a “moderate” one, projecting a rise in atmospheric carbon concentrations to 550–600 parts per million (ppm) with globally averaged temperature increases of 3 to 7°F (2 to 4°C); and an “extreme” one, with carbon reaching 2,000 ppm and temperature rises of “at least 9 to 16°F (5 to 9°C).”13 Either way, Stager argues, the human species is here to stay. Moreover, he even hints that a new “ethics of carbon pollution” may credit us with having rescued our distant descendants from the “ice age devastation” formerly projected for 50,000 years from now.14 By extending the timescale of judgment beyond the wildest imaginings of most historians and moral philosophers, Stager suggests that warming the planet might be considered a virtuous act. By his large-scale measure, not only will we be “fine,” but we will be good.

**It’s not existential.**

**Seidov 14**—Researcher at NOAA and PhD in Geophysics, Fluid Dynamics, and Thermodynamics [Dan, “Are you aware of any peer-reviewed paper that explicitly classifies current global climate change as an existential risk (risk of human extinction)?” Research Gate, 4 Nov 2014, http://tinyurl.com/jrnfafu, accessed 6 Sep 2016]

The current global climate change **does not have a potential to cause human extinction**. Past severe climate changes were critical for many ancient civilizations, yet our existence proofs that they were not potent enough to cause entire termination of the humankind. The projected changes, even in the worst case scenarios, can cause many dramatic local changes. For example, change in rainfall patterns in agricultural countries may lead to possible famine and other dramatic events. However, any imaginable climate changes based on modern climate science **cannot generate existential risks for the entire human civilization**. In my view, a paper predicting such a catastrophe in any foreseeable future, at least on the time scale of human civilization, that is, thousands of years, has no chance of being published in any serious research journal.

**Warming won’t cause extinction**

**Thomas 15**—Associate Professor of history (specializing in nature and environmental history) at the University of Notre Dame [Julia Adeney, “Who is the “we” Endangered by Climate Change?” in Fernando Vidal & Nélia Dias (eds.) *Endangerment, Biodiversity and Culture*, p. 241]

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### Adaptation

**No impact – adaptation and resilience**

**Hart 15** – emeritus professor of international affairs at the Norman Paterson School of International Affairs at Carleton University in Ottawa, Canada

(Michael, former official in Canada’s Department of Foreign Affairs, former Fulbright-Woodrow Wilson Center Visiting Research, former Scholar-in-Residence in the School of International Service and a Senior Fellow in the Center for North American Studies at American University in Washington, MA from the University of Toronto, author, editor, or co-editor of more than a dozen books, “Hubris: The Troubling Science, Economics, and Politics of Climate Change”, google books)//cmr

As already noted, the IPCC scenarios themselves **are wildly alarmist**, not only on the basic science but also on the **underlying** economic **assumptions**, which in turn drive the alarmist impacts. The result **cannot withstand critical analysis**. Economists Ian Castles and David Henderson, for example, show the extent to which the analysis is driven by the desire to reach predetermined outcomes.50 Other economists have similarly wondered what purpose was served by pursuing such unrealistic scenarios. It is hard to credit the defense put forward by Mike Hulme, one of the creators of the scenarios, that the IPCC is not engaged in forecasting the future but in creating “plausible” story lines of what might happen under various scenarios.51 Each **scare scenario** is based on linear projections without **any reference to technological developments or adaptation**. If, on a similar linear basis, our Victorian ancestors in the UK, worried about rapid urbanization and population growth in London, had made similar projections, they would have pointed to the looming crisis arising from reliance on horse-drawn carriages and omnibuses; they would have concluded that by the middle of the 20th century, London would be knee-deep in horse manure, and all of the southern counties would be required to grow the oats and hay to feed and bed the required number of horses. Technology progressed and London adapted. **Why should the rest of humanity not be able to do likewise** in the face of a trivial rise in temperature over the course of **more than a century**? The work on physical impacts is **equally over the top**. All the scenarios assume **only negative impacts**, ignore the reality of **adaptation**, and attribute **any and all things bad** to global warming. Assuming the GHG theory to be correct means that its impact would be most evident at night and during the winter in reducing atmospheric heat loss to outer space.52 It would have greater impact in increasing minimum temperatures than in increasing maximum temperatures. Secondary studies, however, generally **ignore this facet** of the hypothesis. The IPCC believes that a warmer world will harm human health due, for example, to increased disease, malnutrition, heat-waves, floods, storms, and cardiovascular incidents. As already noted **there is no basis for the claim about severe-weather-related threats or malnutrition**. The claim about heat-related deaths gained a boost during the summer of 2003 because of the tragedy of some 15,000 alleged heat-related deaths in France as elderly people stayed behind in city apartments without air conditioning while their children enjoyed the heat at the sea shore during the August vacation. Epidemiological studies of so-called "excess" deaths resulting from heat waves are abused to get the desired results. Similar studies of the impact of cold spells show that they are far more lethal than heat waves and that it is much easier to adapt to heat than to cold.53 More fundamentally, this, like most of the alarmist literature, ignores the basics of the AGW hypothesis: the world will not see an exponential increase in summer, daytime heat (and thus more heat waves), but a decrease in night-time and winter cooling, particularly at higher latitudes and altitudes. Based on the AGW hypothesis, Canada, China, Korea, Northern Europe, Australia, New Zealand, South Africa, Chile, and Argentina will see warmer winters and warmer nights. There are clear benefits to such a development, even if there may also be problems, but the AGW industry tends to ignore the positive aspects of their alarmist scenarios. 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Entomologist Paul Reiter, widely recognized as the leading specialist on malaria vectors and a contributor to some of the early work of the IPCC, was aghast to learn how his careful and systematic analysis of the potential impacts had been twisted in ways that he could not endorse. In a recent paper, he concludes: “Simplistic reasoning on the future prevalence of malaria is ill-founded; malaria is not limited by climate in most temperate regions, nor in the tropics, and in nearly all cases, ’new' malaria at high altitudes is well below the maximum altitudinal limits for transmission. Future changes in climate may alter the prevalence and incidence of the disease, but obsessive emphasis on ’global warming' as a dominant parameter is indefensible; the principal determinants are linked to ecological and societal change, politics and economics.”54 **Catastrophic species loss** similarly has **little foundation in past experience**.55 Even if the GHG hypothesis were to be correct, **its impact would be slow**, **providing significant scope and opportunity for adaptation**, including by ﬂora and fauna. One of the more irresponsible claims was made by a group of UK modelers who fed wildly improbable scenarios and data into their computers and produced the much-touted claim of massive species loss by the end of the century. There are literally **thousands of websites** **devoted to spreading alarm about species loss** and biodiversity. Global warming is **but one of many claimed human threats to the planet’s biodiversity**. The claims, fortunately, are largely hype, based on computer models and the estimate by Harvard naturalist Edward O. Wilson that 27,000 to 100,000 species are lost annually - a figure he advanced purely hypothetically but which has become one of the most persistent of environmental urban myths. The fact is that scientists **have no idea of the extent of the world's ﬂora and fauna**, with estimates ranging from five million to 100 million species, and that there are no reliable data about the rate of loss. By some estimates, 95 percent of the species that ever existed have been lost over the eons, most before humans became major players in altering their environment. A much more credible estimate of recent species loss comes from a surprising source, the UN Environmental Program. It reports that known **species loss is slowing reaching its lowest level in 500 years** in the last three decades of the 20th century, with some 20 reported extinctions despite increasing pressure on the biosphere from growing human population and industrialization.57 The alarmist community has also introduced the scientifically unknown concept of "locally extinct,” often meaning little more than that a species of plant or animal has responded to adverse conditions by moving to more hospitable circumstances, e.g., birds or butterflies becoming more numerous north of their range and disappearing at its extreme southern extent. Idso et al. conclude: “Many species have shown the ability to **adapt rapidly to changes in climate**. Claims that global warming threatens large numbers of species with **extinction** typically rest on a false definition of extinction (the loss of a particular population rather than en- tire species) and **speculation rather than real-world evidence**. The world’s species have proven **very resilient**, having survived past natural climate cycles that involved much greater warming and higher C02 concentrations than exist today or are likely to exist in the coming centuries?”

#### Adaptation and intervening actors check the tail-end risks of warming cause extinction.

Sebastian FARQUHAR ET AL. 17, Project Manager at FHI responsible for external relations, M.A in Physics and Philosophy from the University of Oxford; John Halstead, Global Priorities Project; Owen Cotton-Barratt, Research Associate in the FHI at the University of Oxford, Lecturer in Mathematics at St. Hugh’s College, Oxford; Stefan Schubert, PhD in philosophy, Researcher at the Centre for Effective Altruism; Haydn Belfield, Academic Project Manager, Centre for the Study of Existential Risk, University of Cambridge; Andrew Snyder-Beattie, Director of Research at FHI [“Existential Risk: Diplomacy and Governance,” *Future of Humanity Institute*, University of Oxford, Global Priorities Project 2017, https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf]

The most likely levels of global warming are very unlikely to cause human extinction.15 The existential risks of climate change instead stem from tail risk climate change – the low probability of extreme levels of warming – and interaction with other sources of risk. It is impossible to say with confidence at what point global warming would become severe enough to pose an existential threat. Research has suggested that warming of 11-12°C would render most of the planet uninhabitable,16 and would completely devastate agriculture.17 This would pose an extreme threat to human civilisation as we know it.18 Warming of around 7°C or more could potentially produce conflict and instability on such a scale that the indirect effects could be an existential risk, although it is extremely uncertain how likely such scenarios are.19 Moreover, the timescales over which such changes might happen could mean that humanity is able to adapt enough to avoid extinction in even very extreme scenarios.

The probability of these levels of warming depends on eventual greenhouse gas concentrations. According to some experts, unless strong action is taken soon by major emitters, it is likely that we will pursue a medium-high emissions pathway.20 If we do, the chance of extreme warming is highly uncertain but appears non-negligible. Current concentrations of greenhouse gases are higher than they have been for hundreds of thousands of years,21 which means that there are significant unknown unknowns about how the climate system will respond. Particularly concerning is the risk of positive feedback loops, such as the release of vast amounts of methane from melting of the arctic permafrost, which would cause rapid and disastrous warming.22 The economists Gernot Wagner and Martin Weitzman have used IPCC figures (which do not include modelling of feedback loops such as those from melting permafrost) to estimate that if we continue to pursue a medium-high emissions pathway, the probability of eventual warming of 6°C is around 10%,23 and of 10°C is around 3%.24 These estimates are of course highly uncertain.

It is likely that the world will take action against climate change once it begins to impose large costs on human society, long before there is warming of 10°C. Unfortunately, there is significant inertia in the climate system: there is a 25 to 50 year lag between CO2 emissions and eventual warming,25 and it is expected that 40% of the peak concentration of CO2 will remain in the atmosphere 1,000 years after the peak is reached.26 Consequently, it is impossible to reduce temperatures quickly by reducing CO2 emissions. If the world does start to face costly warming, the international community will therefore face strong incentives to find other ways to reduce global temperatures.

#### Self-preservation is inevitable---the aff is one of thousands of tries---don’t be black-mailed by “now or never” rhetoric.

Morton 16—British science writer, former editor of *Nature*, fellow at the Hybrid Vigor Institute, and a degree in the history and philosophy of science from Cambridge [Oliver, “Scientists Focused on Geoengineering Challenge the Inevitability of Multi-Millennial Global Warming,” 2 Sep 2016, <http://tinyurl.com/gs2e7ea>, accessed 11 Oct 2016]

That may read as a flippant trivialization. But I think the authors of the NCC paper trivialize the issue, too; they just do it more subtly, through neglect. The sentence I just quoted implies pretty strongly that, in the presence of efficient (or for that matter inefficient) large-scale capture and storage of airborne carbon, carbon emissions that have already occurred or will occur in the near future might not result in a commitment to climate change that is irreversible on timescales of centuries to millennia and longer. That’s quite an important statement. But it receives almost no follow-up at all in the subsequent six pages. A paper that makes use of the concept of the Anthropocene — a concept predicated on the idea that human activity is a dominant factor in the state of the earth system — does not spend any time at all looking at what humans might try to do, or be able to do, about the problems it discusses over the periods it imagines.

It is easy to understand why not. This is a paper by natural scientists, and the natural sciences give you no way of understanding what people will attempt to do in the time-scales under discussion. (Nor does anything else, which is one reason Rob Socolow’s notion of “Destiny studies” is, as you say on Dot Earth, a welcome one.) But rather than discuss the impossibility of predicting or modeling human decisions or capabilities, the authors choose not to address the issue at all, and this undercuts the seriousness of their undertaking. When there is a huge source of uncertainty in your analysis you should be explicit about it. You should try to assess the limits it puts on the salience of your results and what might be done about those limits. Instead the authors choose to proceed as though humans will do nothing other than what they are doing today, and make no effort to justify their decision to privilege that singular scenario. That is what I mean when I say I think they trivialise the issue.

I know that there are not yet any negative emissions technologies up to the task. But the possibility of such things is under active discussion. Indeed negative emissions are already being incorporated into the sort of integrated assessment models that inform discussion like those of COP 21 in Paris. Those scenarios typically demonstrate a lack of specificity about the costs and potentially enormous impacts of such technologies, which makes their ready and convenient acceptance of a currently hypothetical capability disturbing. But to ignore the potential capability completely does not redress that problem. The NCC paper makes great play of taking a long view, putting itself forward as a necessary and clear-sighted corrective to analyses that content themselves with looking out only 85 years. To do so without making any attempt to examine the role negative emissions might play in coming centuries demands a pretty explicit justification.

#### We’ll adapt---checks the impact of thresholds.

Brown 15—Senior Research Fellow at the Stockholm Environment Institute (York University) and a Senior Research Scientist at the James Hutton Institute [Iain, “Comparative Risk Assessment to Inform Adaptation Priorities for the Natural Environment: Observations from the First UK Climate Change Risk Assessment,” *Climate*, Vol. 3, No. 4, p. 937-963, Emory Libraries]

The CCRA process particularly highlighted the added benefits of integrated responses to climate change through “ecosystem-based adaptation” that can also enhance natural resilience to buffer undesirable and uncertain change. This included fundamental recognition of ecological adaptation as a natural process that often provides an under-recognised complement for human adaptation processes, but also that in socio-ecological systems people have a key role in facilitating ecological adaptation. Actions to counter current sensitivities by enhancing natural adaptive capacity and resilience therefore provide “no-regrets” measures that will reduce risks regardless of uncertainties in the rate of climate change and level of exposure [109]. The key response that will enhance this capacity is to reduce existing pressures, thereby significantly reducing the likelihood of crossing key thresholds that would lead to irreversible and severely damaging consequences [110].

### Too Late

**Warming inevitable**

**McKibben, 16**—Schumann Distinguished Scholar at Middlebury College (Bill, “Recalculating the Climate Math,” <https://newrepublic.com/article/136987/recalculating-climate-math>, dml) [ableist metaphor modifications denoted by brackets]

The future of humanity depends on math. And the numbers in a **new study** released Thursday are the **most ominous yet**. Those numbers spell out, in simple arithmetic, how much of the fossil fuel in the world’s existing coal mines and oil wells we can burn if we want to prevent global warming from cooking the planet. In other words, if our goal is to keep the Earth’s temperature from rising more than two degrees Celsius—the upper limit identified by the nations of the world—how much more new digging and drilling can we do? Here’s the answer: **zero**. That’s right: If we’re serious about preventing catastrophic warming, the new study shows, we can’t dig any new coal mines, drill any new fields, build any more pipelines. Not a single one. We’re done expanding the fossil fuel frontier. Our only hope is a swift, managed decline in the production of all carbon-based energy from the fields we’ve already put in production. The new numbers are startling. Only four years ago, I wrote an essay called “Global Warming’s Terrifying New Math.” In the piece, I drew on research from a London-based think tank, the Carbon Tracker Initiative. The research showed that the untapped reserves of coal, oil, and gas identified by the world’s fossil fuel industry contained five times more carbon than we can burn if we want to keep from raising the planet’s temperature by more than two degrees Celsius. That is, if energy companies eventually dug up and burned everything they’d laid claim to, the planet would cook five times over. That math kicked off a widespread campaign of divestment from fossil fuel stocks by universities, churches, and foundations. And it’s since become the conventional wisdom: Many central bankers and world leaders now agree that we need to keep the bulk of fossil fuel reserves underground. But the new new math is **even more explosive**. It draws on a report by Oil Change International, a Washington-based think tank, using data from the Norwegian energy consultants Rystad. For a fee—$54,000 in this case—Rystad will sell anyone its numbers on the world’s existing fossil fuel sources. Most of the customers are oil companies, investment banks, and government agencies. But OCI wanted the numbers for a different reason: to figure out how close to the edge of catastrophe we’ve already come. Scientists say that to have even a two-thirds chance of staying below a global increase of two degrees Celsius, we can release **800** gigatons more CO2 into the atmosphere. But the Rystad data shows coal mines and oil and gas wells **currently in operation** worldwide contain **942** gigatons worth of CO2. So the math problem is simple, and it goes like this: 942 > 800 “What we found is that if you burn up all the carbon that’s in the **currently operating fields and mines**, you’re **already above two degrees**,” says Stephen Kretzmann, OCI’s executive director. It’s not that if we keep eating like this for a **few more decades** we’ll be ~~morbidly obese~~ [doomed]. It’s that if we eat **what’s already in the refrigerator** we’ll be ~~morbidly obese~~ [doomed]. What’s worse, the definition of “morbid” has changed in the past four years. Two degrees Celsius used to be the red line. But scientists now believe the upper limit is **much lower**. We’ve already raised the world’s temperature by one degree—enough to **melt almost half the ice** in the Arctic, **kill off huge swaths of the world’s coral**, and **unleash lethal floods** and **drought**. July and August tied for the hottest months ever recorded on our planet, and scientists think they were almost certainly the hottest in the history of human civilization. Places like Basra, Iraq—on the edge of what scholars think was the Biblical Garden of Eden—hit 129 degrees Fahrenheit this year, approaching the point where humans **can’t survive outdoors**. So last year, when the world’s leaders met in Paris, they set a new number: Every effort, they said, would be made to keep the global temperature rise to less than 1.5 degrees. And to have even a 50–50 chance of meeting that goal, we can only release about 353 gigatons more CO2. So let’s do the math again: 942 > 353

#### The Antarctic positive feedback loop is locked in. That makes broader climate disruptions inevitable!!

Spratt 1/23 (David Spratt – climate-policy analyst and co-founder of Carbon Equity, “Antarctic tipping points for a multi-metre sea level rise,” 23 January 2017, http://www.climatecodered.org/2017/01/antarctic-tipping-points-for-multi.html)

OVERVIEW The Amundsen Sea sector of the West Antarctic Ice Sheet has most likely been destabilized and ice retreat is unstoppable for the current conditions. No further acceleration in climate change is necessary to trigger the collapse of the rest of the West Antarctic Ice Sheet on decadal time scales. Antarctica has the potential to contribute more than a metre of sea-level rise by 2100. A large fraction of West Antarctic basin ice could be gone within two centuries, causing a 3–5 metre sea level rise. Mechanisms similar to those causing deglaciation in West Antarctica are now also found in East Antarctica. Partial deglaciation of the East Antarctic ice sheet is likely for the current level of atmospheric carbon dioxide, contributing to 10 metres of more of sea level rise in the longer run, and 5 metres in the first 200 years. INTRODUCTION The West Antarctic Ice Sheet (WAIS), comprising more than two million cubic kilometres of ice, is under pressure from a warming climate, with scientists saying its break-up –– and an eventual global sea-level rise of 3–5 metres –– is not matter of if, but when. The West Antarctic Peninsula is now the strongest-warming region on the planet, and WAIS glaciers are discharging ice at an accelerating rate (Rignot, Velicogna at al (2011) “Acceleration of the contribution of the Greenland and Antarctic ice sheets to sea level rise”, GRL 38: L05503-7; Mouginot, Rignot and Scheuchl (2014) “Sustained increase in ice discharge from the Amundsen Sea Embayment, West Antarctica, from 1973 to 2013”, GRL 41:1576-1584). Recent studies, surveyed in this report, suggest that WAIS passed a tipping point for large-scale deglaciation decades ago. This should not be surprising, because such an event was foreseen almost 50 years ago. In 1968, pioneer glacier researcher John Mercer predicted that the collapse of ice shelves along the Antarctic Peninsula could herald the loss of the ice sheet. Ten years later, Mercer contended that "a major disaster — a rapid deglaciation of West Antarctica — may be in progress … within about 50 years” (“West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster”, Nature 271:321-325). He said that warming “above a critical level would remove all ice shelves, and consequently all ice grounded below sea level, resulting in the deglaciation of most of West Antarctica”. Such disintegration, once under way, would “probably be rapid, perhaps catastrophically so”, with most of the ice sheet lost in a century. Credited with coining the phrase “the greenhouse effect” in the early 1960s, Mercer’s Antarctic prognosis was widely ignored and disparaged at the time. Now in seems uncannily prescient. Climate author Fred Pearce (in his 2007 book “With Speed and Violence”) quotes the leading cryosphere scientist Richard Alley as saying a decade ago that there is “a possibility that the West Antarctic ice sheet could collapse and raise sea levels by 6 yards [5.5 metres]” this century. Pearce also interviewed NASA glaciologist Eric Rignot who has studied the Pine Island glacier in West Antarctica for decades, and concluded that “the glacier is primed for runaway destruction”. Although the much larger East Antarctic Ice Sheet (EAIS) — with potential for a 50-metre sea-level rise if all ice were lost — has generally been considered more stable than WAIS, recent evidence suggests some outlet glaciers there are displaying similar dynamics to those on West Antarctica. GEOGRAPHY An ice shelf is a floating sheet, or platform, of ice that is largely submerged and, up to two kilometres in height, that abuts a land-based glacier, and extends into the ocean. The “grounding line” marks the boundary between grounded ice (glacier) and the floating ice shelf. Generally, an ice shelf will lose volume by calving icebergs from the seaward-facing edge, but it can also be subject to rapid disintegration events, in which cracking can dislodge very large sections of ice. The formation of a huge crack — 100 kms long, half a kilometre wide and a hundred metes deep — in the Larsen C ice shelf is one recent example. Warming Antarctic waters are melting and thinning the underside of ice shelves, making them more susceptible to disintegration. Ice shelves act as a “plug” that buttresses and slow the rate at which glaciers drain into the ocean, so the loss or diminution of the ice shelf will accelerate the pace of glacier movement and hence the rate of ice mass loss. Because much of WAIS sits on bedrock that is below sea level (buttressed on two sides by mountains, and held in place on the other two sides by the Ronne and Ross ice shelves), melting of the submerged ice shelf allows warm ocean waters to proceed inland under the ice sheet. This creates hidden valleys of melting ice, puts pressure on the surface above, and contributes to large-scale rifting (cracking). This process also results in the grounding line being pushed further inland, in effect transforming the lower reaches of the glacier into an ice shelf. Over the past 40 years, glaciers flowing into the Amundsen Sea sector of WAIS (including Pine Island, Thwaites, Smith and Kohler glaciers) have thinned at an accelerating rate, and observations and several numerical models suggest that unstable and irreversible retreat of the grounding line is under way. Whilst it is traditionally considered that WAIS deglaciation would take a thousand years or more, some experts have suggested in could occur in a period as short as a couple of centuries because the rate of change in atmospheric greenhouse gases and in the global temperature are unprecedented. RECENT RESEARCH: WEST ANTARCTICA Rignot, Mouginot et al (2014) “Widespread, rapid grounding line retreat of Pine Island, Thwaites, Smith, and Kohler glaciers, West Antarctica, from 1992 to 2011”, Geophys. Res. Lett. 41:3502–3509 The researchers found that the “tipping point” has already passed for one of these “long-term” events. In the “Guardian” on 18 May 2014, lead researcher Dr Eric Rignot explained: “We announced that we had collected enough observations to conclude that the retreat of ice in the Amundsen sea sector of West Antarctica was unstoppable, with major consequences – it will mean that sea levels will rise one metre worldwide. What's more, its disappearance will likely trigger the collapse of the rest of the West Antarctic ice sheet, which comes with a sea level rise of between three and five metres. Such an event will displace millions of people worldwide” (emphasis added). This study, authored by some the world’s best cryosphere scientists, stunned the research community. Malte Meinshausen, an IPCC lead author who also developed the RCP scenarios, said this research is “a game changer, this is just one surprise with global warming of only 0.8 degrees of warming", and a “tipping point that none of us thought would pass so quickly”, showing we are ”committed already to a change in coastlines that is unprecedented for us humans” (https://vimeo.com/97926131). One of the authors of this paper was asked what conditions would be necessary to stop the loss of most of WAIS. The answer was that restoring the temperature of the 1970s might do it. On the fate of West Antartica, Rignot says “at the current rate, a large fraction of the (WAIS) basin will be gone in 200 years, but recent modelling studies indicate that the retreat rate will increase in the future… but it could be within a couple of centuries” (emphasis added). Another paper (Joughin, Smith and Medley (2014) “Marine Ice Sheet Collapse Potentially Underway for the Thwaites Glacier Basin, West Antarctica”, Science, 344:735–738) uses models which the “indicate that early-stage collapse has begun” of the Thwaites Glacier, and that no further acceleration of climate change and only modest extrapolations of the current increasing mass loss rate are necessary for the system eventually to collapse. “The next stable state for the West Antarctic Ice Sheet might be no ice sheet at all,” says the paper’s lead author, glaciologist Ian Joughin. Ted Scambos of the National Snow and Ice Data Centre and John Abraham of the University of St Paul explain: “For decades, it has been suspected that this region is particularly susceptible to rapid ice loss, through a ‘runaway retreat’. The cause of the retreat is known to be increased frequency of warm ocean water intrusions onto the continental shelf, which appears to be a consequence of increased westerly circumpolar winds over the Southern Ocean. Models suggest that increased winds are a result of increased greenhouse gas forcing in the Earth system, and ozone loss effects on stratospheric/tropospheric circulation” (“Briefing: Antarctic ice sheet mass loss and future sea-level rise”, Proceedings of the Institution of Civil Engineers, 2014). Feldman and Levermann (2015) “Collapse of the West Antarctic Ice Sheet after local destabilization of the Amundsen Basin”, PNAS 112;14191-14196 This modelling study of the Amundsen Basin finds that “a local destabilization causes a complete disintegration of the marine ice in West Antarctica… the region disequilibrates after 60 years of currently observed melt rates” (emphasis added). [The melt rates are observed to be continuing to accelerate, so the actual time line will be a good deal shorter.] The significance of the study is given as: “The Antarctic Ice Sheet is losing mass at an accelerating rate, and playing a more important role in terms of global sea-level rise. The Amundsen Sea sector of West Antarctica has most likely been destabilized. Although previous numerical modeling studies examined the short-term future evolution of this region, here we take the next step and simulate the long-term evolution of the whole West Antarctic Ice Sheet. Our results show that if the Amundsen Sea sector is destabilized, then the entire marine ice sheet will discharge into the ocean, causing a global sea-level rise of about 3 metres. We thus might be witnessing the beginning of a period of self-sustained ice discharge from West Antarctica that requires long-term global adaptation of coastal protection” (emphasis added). Hansen, Sato et al (2015) “Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2°C global warming could be dangerous”, Atmos. Chem. Phys. 16:3761-3812 This research surveys evidence from the previous warm Eemian interglacial period around 120,000 years ago. At that time there were rapid fluctuations in sea level, and the study identifies a mechanism in the Earth’s climate system not previously understood, which points to a much more rapid rise in sea levels than currently anticipated. Increasing ocean stratification occurs when cooler surface layers from melting ice sheets trap warmer waters underneath, accelerating their impact on the melting of ice shelves and outlet glaciers. This in turn increases ice sheet mass loss, and generates more cool surface melt water in a positive feedback. The consequences include the slowing or shutting down of key ocean currents including the Atlantic Meridional Overturning Circulation (AMOC), which Hansen says would increase temperature differentials between tropical and sub-polar waters, and drive “super storms” such that “All hell will break loose in the North Atlantic and neighbouring lands”. The projected cooling pattern of waters around Antarctica and the north Atlantic waters from the injection of fresh ice-melt water is already visible in the observed data (see diagram below), and is already contributing to a circulation decline of AMOC. Smith, Anderson et al (2016) “Sub-ice-shelf sediments record history of twentieth-century retreat of Pine Island Glacier”, Nature, 23 November 2016, doi:10.1038/nature20136 This study finds that the present thinning and retreat of Pine Island Glacier in West Antarctica is part of a climatically forced trend that was triggered in the 1940s when an ocean cavity formed beneath the ice shelf, and followed a period of strong warming of West Antarctica, associated with El Niño activity. The final ungrounding of the ice shelf from the seafloor ridge occurred in 1970 (see diagram below). It is interesting to compare this result with the view of researchers in the Rignot, Mouginot et al 2014 paper cited above that restoration of climate conditions of 1970s would be necessary to prevent widespread ice mass loss from WAIS. RECENT RESEARCH: EAST ANTARCTICA DeConto and Pollard (2016) “Contribution of Antarctica to past and future sea-level rise”, Nature 531:591–597 In this research, climate models that better link atmospheric warming with the fracturing of buttressing ice shelves and structural collapse of their ice cliffs are used, calibrated against past warm-period climate events and sea-level estimates, and then applied to future greenhouse gas emission scenarios. During the last interglacial (warm) period 130,000 to 115,000 years ago, the global mean sea level was 6–9.3 metres higher than it is today, at a time when atmospheric carbon dioxide concentrations were below 280 parts per million (the pre-industrial level, and 30% less than today),and global mean temperatures were only about 0–2 °C warmer. Under a high-emissions scenario, their model shows that rapidly warming summer air temperatures trigger extensive surface meltwater production and hydrofracturing of ice shelves by the middle of this century, with Larcen C the first ice shelf to be lost, and major thinning and retreat of Amundsen Sea outlet glaciers at the same time. (Note: The fracturing of the Larsen C ice shelf is a current reality!) They conclude that: “Antarctica has the potential to contribute more than a metre of sea-level rise by 2100 and more than 15 metres by 2500”, doubling previous forecasts for total sea level rise this century to two metres or more. This estimate of Antarctica alone contributing “more than a metre of sea-level rise by 2100” is consistent with the work of Hansen, Sato et al (above). Pollard, DeConto and Alley (2015) “Potential Antarctic Ice Sheet retreat driven by hydrofracturing and ice cliff failure”, Earth Planet. Sci. Lett. 412:112–121. During the warmest part of the Pliocene (5.3 to 2.6 million years ago) atmospheric carbon dioxide concentrations were comparable to today’s (~400 parts per million), temperatures were 1–2°C warmer than now, and some sea-level reconstructions are 10–30 metres higher. Because WAIS and Greenland can supply less than 10 metres of sea level rise between them, this means there was substantial ice mass loss from East Antartica. In this study, the authors model Pliocene conditions in the Antarctic by taking the current (and Pliocene) level of 400 parts per million carbon dioxide, and impose a 2°C ocean warming to represent maximum mid-Pliocene ocean warmth. Their model also incorporates mechanisms based on recent observations and analysis: “floating ice shelves may be drastically reduced or removed completely by increased oceanic melting, and by hydrofracturing due to surface melt draining into crevasses. Ice at deep grounding lines may be weakened by hydrofracturing and reduced buttressing, and may fail structurally if stresses exceed the ice yield strength, producing rapid retreat.” The updated model “accelerates the expected collapse of the West Antarctic Ice Sheet to decadal time scales (rather than century-to-millennial time scales), and also causes retreat into major East Antarctic subglacial basins, producing ∼17 metres global sea-level rise within a few thousand years” and five metres in the first 200 years (emphasis added). [In the followup 2016 paper cited above, an updated model produces an 11.3-metre contribution to global mean sea level rise, reflecting a reduction in its sensitivity of about 6 metres relative to the formulation in this paper of ~17 metres, but within the range of plausible sea-level estimates.] Phipps, Fogwill and Turney (2016) “Impacts of marine instability across the East Antarctic Ice Sheet on Southern Ocean dynamics”, The Cryosphere, 10:2317–2328 This research concludes that local melting from the Wilkes Basin in East Antarctica “could potentially destabilise the wider Antarctic Ice Sheet” as meltwater rapidly stratifies surface waters so, whilst the surface ocean cools, the Southern Ocean warms by more than 1°C at depth. “The temperature changes propagate westwards around the coast of the Antarctic continent with increasing depth, representing a positive feedback mechanism that has the potential to amplify melting around the continent… Thus, destabilisation of large sectors of the EAIS could arise from warming and melting in just one area.” As well: “Our results suggest that melting of one sector of the EAIS could result in accelerated warming across other sectors, including the Weddell Sea sector of the West Antarctic Ice Sheet” (emphasis added). This paper is also consistent with Hansen, Sato et al in finding a process of water column stratification and warmer sub-surface waters as a positive feedback mechanism that has the potential to amplify melting. Mendel and Levermann (2014) “Ice plug prevents irreversible discharge from East Antarctica”, Nature Climate Change 4:451–455 Substantial sectors of the EAIS, including Wilkes Basin, are underlain by extensive marine-based subglacial basins. This study shows that the removal of an ice plug (shelf) at the margin of the Wilkes Basin, that would cause less than 80mm of global sea-level rise, would destabilize the regional ice flow and leads to a self-sustained discharge of the entire basin and a global sea-level rise of 3–4 metres. As with the DeConto and Pollard papers above, this study also discusses the analogous situation of the the mid-to late Pliocene when “massive ice discharge occurred from the unstable margins of Adélie and Wilkes Land due to ice-stream surges that were linked to rapid grounding-line retreat during a warming climate”. Lenaerts, Lhermitte et al (2016) “Meltwater produced by wind–albedo interaction stored in an East Antarctic ice shelf”, Nature Climate Change 7:58-62 This study identifies a mechanism that triggers melting deep in the Roi Baudouin ice shelf in East Antarctica. Strong winds helped heat the air and cause white ice to melt out, exposing a layer of dark ice beneath, which in turns absorbs more sunlight, further expediting the melt. In these hotspots, surface glacial lakes form and meltwater pours into moulins, that funnel surface meltwater into the heart of the ice. As well, researchers found subterranean “englacial” lakes in the ice sheet. In total, 55 lakes on or in the ice shelf were identified. This means the ice shelf has many large pockets of weakness throughout its structure, suggesting a greater potential vulnerability to collapse through hydrofracturing, especially if lake formation continues or increases. Fogwill, Turney et al (2017) “Antarctic ice sheet discharge driven by atmosphere-ocean feedbacks at the Last Glacial Termination”, Scientific Reports 7, article 39979 Antarctic ice mass loss during the end of the last ice age 14,600–12,700 yrs ago contributed several metres to sea levels which from various sources rose by tens of metres. At that time, changes in atmospheric-oceanic circulation led to a stratification in the ocean with a cold layer at the surface and a warm layer below. Under such conditions, ice sheets melt more strongly than when the surrounding ocean is thoroughly mixed. This is exactly what is presently happening around the Antarctic now. Research team member Michael E. Weber says, "The changes that are currently taking place in a disturbing manner resemble those 14,700 years ago." A NUMBER of recent studies have focussed on the Totten Glacier in East Antartica. Several lines of evidence suggest possible collapse of Totten Glacier into interior basins during past warm periods, most notably the Pliocene epoch, and the glacier is again becoming vulnerable: Totten has the largest thinning rate in East Antarctica, driven by enhanced melting of the ice shelf bottom, due to ocean processes. An ice-shelf cavity below depths of 400 to 500 metres could allow intrusions of warm water and an inland trough that connects the main ice-shelf cavity to the ocean. If thinning trends continue, a larger water body over the trough could potentially allow more warm water into the cavity, which may, eventually, lead to destabilization of the low-lying region between Totten Glacier and the similarly deep glacier flowing into the Reynolds Trough [Greenbaum, Blankenship et al (2015) “Ocean access to a cavity beneath Totten Glacier in East Antarctica”, Nature GeoScience]. Totten could become unstable if global warming continues at the present pace. As warm seas wash the ice shelf, the land-based mass of ice could begin to retreat, cross a critical threshold in the present century and then withdraw 300 kilometres inland [Aitken, Roberts et al (2016) “Repeated large-scale retreat and advance of Totten Glacier indicated by inland bed erosion”, Nature 533:385–389]. Totten is melting from below as warm ocean water flows inward powerfully towards Totten glacier, causing the ice shelf to lose between 63 and 80 billion tons of its mass to the ocean per year. Warm water enters a cavity beneath the glacier through a newly discovered deep water channel [Rintoul, Silvan et al (2016) “Ocean heat drives rapid basal melt of the Totten Ice Shelf”, Science Advances 2:e1601610]. CONCLUSION In late 2015, a chilling report by scientists for the International Cryosphere Climate Initiative on “Thresholds and closing windows: Risks of irreversible cryosphere climate change” (http://iccinet.org/thresholds) warned that the Paris commitments will not prevent the Earth “crossing into the zone of irreversible thresholds” in polar and mountain glacier regions, and that crossing these boundaries may “result in processes that cannot be halted unless temperatures return to levels below pre-industrial” (emphasis added). The report says it is not well understood outside the scientific community that cryosphere dynamics are slow to manifest but once triggered “inevitably forces the Earth’s climate system into a new state, one that most scientists believe has not existed for 35–50 million years” (emphasis added). Ian Howat, associate professor of earth sciences at Ohio State University, says: “It’s generally accepted that it’s no longer a question of whether the West Antarctic Ice Sheet will melt, it’s a question of when. This kind of rifting (cracking) behaviour provides another mechanism for rapid retreat of these glaciers, adding to the probability that we may see significant collapse of West Antarctica in our lifetimes.” (https://www.siliconrepublic.com/innovation/antarctic-ice-sheet-global-warming) The scientists I have communicated with take the view that Rignot, Mouginot et al. is a credible paper and, together with the evidence published since, it would be prudent to accept that WAIS has very likely passed its tipping point for mass deglaciation, with big consequences for global sea level rise (SLR). DeConto and Pollard project more than a metre of SLR from Antarctica this century. This tallies with the Hanse, Sato et al scenario, which is also consistent with the findings of Phipps, Fogwill and Turney. The reality of multi-metre SLRs is not if, but how soon. “The natural state of the Earth with present CO2 levels is one with sea levels about 70 feet (21 metres) higher than now” says Prof. Kenneth G. Miller (http://news.rutgers.edu/news-releases/2012/03/global-sea-level-lik-20120316). Other research scientists agree it is likely to be more than 20 metres over the longer term (<https://www.sciencedaily.com/releases/2009/06/090622103833.htm>).

#### Arctic ice loss also triggers 6 degree warming and ozone destruction is guaranteed

McPherson 2-9 (Guy McPherson – professor emeritus of natural resources, ecology, and evolutionary biology @ the University of Arizona, “Faster Than Expected”, https://guymcpherson.com/2017/02/faster-than-expected/)

According to the Pentagon’s JASON Group, the situation for life on Earth will be far worse than I have ever described. A well-informed insider there wrote on 19 December 2016: “THE JASON GROUP at the Pentagon is getting new data (upon my constant requests) that the effect of over 450 reactors melting down will most likely destroy the Ozone layers. Rather than going Venus Earth will end up more like Mars. Very dead with almost no chance to regenerate an atmosphere. Report to be published in 2017.” The ice-free Arctic predicted by the U.S. Naval Postgraduate School in 2016, + 3 years, seems likely in 2017. Arctic ice is very fragile. Regardless when it arrives, the near-term ice-free Arctic will be experienced by humans for the first time. Ever. This event might trigger the 50-Gt burst of methane forecast by Shakhova and colleagues at the European Geophysical Union annual meeting in 2008 (“we consider release of up to 50 Gt of predicted amount of hydrate storage as highly possible for abrupt release at any time”). I reasonably use the ice-free Arctic as a proxy for this first burst of atmospheric methane. After all, it’s been “highly possible for abrupt release at any time” for nearly a decade. In May 2015, Shakhova lied about the research group’s earlier statement about an abrupt release of methane — when she could have easily retracted the statement — saying, “We never stated that 50 gigatonnes is likely to be released in near or distant future.” Arctic methane release increased significantly between 2014 and the autumn of 2016. The first 50-gigatonne burst of methane described by Shakhova et al. translates to a global temperature rise of 1.3 C, which causes civilization to collapse because grains cannot be grown at scale. Industrial civilization, as with its predecessors, requires grain production and storage. This abrupt rise in temperature would be felt within a few weeks in the Northern Hemisphere — where nearly all civilization-supporting grains are grown — and within a year throughout the world. It would take Earth’s global-average temperature well beyond the point that has supported humans in the past. Ever. Lack of global dimming adds another ~3 C. Earth is then ~6 C above the 1750 baseline by the following spring (2018?). About 2/3 of the temperature rise comes within a few months. I doubt there’s habitat for humans or many other animals at that point. After all, the slow rise in global-average temperature documented so far outstrips the ability of vertebrates to adapt by more than 10,000 times.

#### It’s too late to solve warming.

Kreutzer et al. 16—David W. Kreutzer a Senior Research Fellow at Heritage’s Center for Data Analysis and a PhD in economics from Virginia Tech // Nicolas Loris a Fellow in Energy and Environmental Policy at the Institute for Economic Policy Studies // Katie Tubb a Policy Analyst at the Institute for Economic Policy Studies // Kevin D. Dayaratna a Senior Statistician and Research Programmer at the Center for Data Analysis and a PhD [“The State of Climate Science: No Justification for Extreme Policies,” The Heritage Foundation, 22 Apr 2016, No. 3119, <http://www.heritage.org/research/reports/2016/04/the-state-of-climate-science-no-justification-for-extreme-policies>, accessed 20 Aug 2016]

The High Costs and Negligible Benefits of Climate Policy

Despite trends in the actual climate data and the failure of models to accurately depict reality, many alarmists still argue that carbon mitigation policies are necessary to combat damages caused by future climate change. Heritage Foundation research has found that any sort of carbon tax, cap and trade, or other combination of carbon regulations such as the regulations on new power plants and existing ones (the Clean Power Plan) will only kill jobs and cut income, all without having any meaningful impact on global temperatures, now or in the future.

Higher Energy Bills, Less Economic Growth. A Heritage Foundation analysis[55] estimates that, by 2035, the costs of the Obama Administration’s climate agenda to be: An average employment shortfall of nearly 400,000 jobs; Average employment shortfall in manufacturing of 200,000 jobs; An aggregate gross domestic product (GDP) loss of more than $2.5 trillion (inflation-adjusted); and A total income loss of more than $20,000 per family of four (inflation-adjusted).

Higher energy costs hurt low-income families the most as they spend a disproportionate percentage of their budget on energy bills. In fact, EPA Administrator McCarthy admitted that the Clean Power Plan would do as much, saying, “We know that low-income, minority communities would be hardest hit.”[56]

No Climate Benefit. The climate return, if any, is negligible as the President’s climate policies will have next to no impact on global temperatures. The same climate sensitivity modeling as used by the EPA shows that totally eliminating all CO2 emissions from the U.S. would moderate any warming by only 0.137 degree Celsius by 2100.[57] If the entire industrialized world totally eliminated all CO2 emissions, only 0.278 degree Celsius of warming would be averted by the end of the century.[58]

Even supporters of the Obama Administration who believe global warming is a crisis have complained the Administration’s efforts fall pathetically short of what is needed.[59] EPA Administrator McCarthy has admitted in congressional testimony that the benefits of the Clean Power Plan cannot be characterized in terms of global temperature reductions.[60] Secretary of State John Kerry perhaps put it most clearly while speaking at the United Nations Framework Convention on Climate Change (UNFCCC):

The fact is that even if every American citizen biked to work, carpooled to school, used only solar panels to power their homes, if we each planted a dozen trees, if we somehow eliminated all of our domestic greenhouse gas emissions, guess what—that still wouldn’t be enough to offset the carbon pollution coming from the rest of the world.

If all the industrial nations went down to zero emissions—remember what I just said, all the industrial emissions went down to zero emissions—it wouldn’t be enough, not when more than 65 percent of the world’s carbon pollution comes from the developing world.[61]

#### It’s too late to solve.

Glikson 16—Principal Research Scientist at the Australian Geological Survey, Visiting Fellow at the Research School of Earth Science (Australian National University), and a PhD in geology from the University of Western Australia [Andrew, “Global heating and the dilemma of climate scientists,” ABC, 28 Jan 2016, http://tinyurl.com/jhrb92x, accessed 24 Aug 2016]

For one, they do. A number of prominent climate scientists, mostly representing the scientific consensus on climate change documented by the IPCC, have tried their best to convey the message in public forums. These scientists are mostly shunned by the conservative media which commonly offers platforms for those who do not accept the scientific evidence and the basic laws of nature.

A sizable group of climate scientists tends to regard the IPCC-based climate consensus as too optimistic.

However, mostly these scientists tend to be shunned by the media, as stated by Chomsky:

It's interesting that these (public climate) debates leave out almost entirely a third part of the debate, namely, a very substantial number of scientists, competent scientists, who think that the scientific consensus is much too optimistic. A group of scientists at MIT came out with a report about a year ago describing what they called the most comprehensive modelling of the climate that had ever been done. Their conclusion, which was unreported in public media as far as I know, was that the major scientific consensus of the international commission is just way off, it's much too optimistic ... their own conclusion was that unless we terminate use of fossil fuels almost immediately, it's finished. We'll never be able to overcome the consequences. That's not part of the debate.

### No Wars

#### No climate wars

**Tertrais 11**, Bruno, Senior Research Fellow at the Foundation for Strategic Research, and a Washington Quarterly editorial board member [“The Climate Wars Myth,” Summer, The Washington Quarterly • 34:3 pp. 1729]

So much for ‘‘climate wars.’’ But the idea according to which climate change is nevertheless a new, important factor to be taken into account in defense and security planning is itself questionable. Of course, nothing precludes us from including it in the growing list of non-military issues that may have a bearing on global security. But this has to be done in a realistic way. It is not unreasonable to state that climate change may be a ‘‘threat multiplier,’’ for instance.47 However, stating this says nothing about the probability of increased violence or instability either at the global level or for a given crisis, or about the likelihood of state failure. Such consequences depend primarily on the reaction of governments and societies, a factor which is impossible to calculate in advance. There are no data to support the vague idea that climate change can have a key role in triggering collective violence that is, be the proverbial straw that breaks the camel’s back, as argued by an alarmist study (citing once again the example of Darfur).48 Climate is ‘‘one of myriad factors in a complex causal web underlying conflict,’’ and the environment is just ‘‘one of manifold and nonessential causal factors’’ which may lead to war.49 The main causes of contemporary conflict are societal, not natural (in the broadest sense of the term, i.e., including man-made).50 Conflicts are borne out of human choices and mistakes.

#### NO climate wars

Erik Gartzke 11, Associate Professor of Political Science at UC-San Diego, March 16, 2011, “Could Climate Change Precipitate Peace?,” online: <http://dss.ucsd.edu/~egartzke/papers/climate_for_conflict_03052011.pdf>

An evolving consensus that the earth is becoming warmer has led to increased interest in the social consequences of climate change. Along with rising sea levels, varying patterns of precipitation, vegetation, and possible resource scarcity, perhaps the most incendiary claims have to do with conflict and political violence. A second consensus has begun to emerge among policy makers and opinion leaders that global warming may well result in increased civil and even interstate warfare, as groups and nations compete for water, soil, or oil. Authoritative bodies, leading government officials, and even the Nobel Peace prize committee have highlighted the prospect that climate change will give rise to more heated confrontations as communities compete in a warmer world.Where the basic science of climate change preceded policy, this second consensus among politicians and pundits about climate and conflict formed in the absence of substantial scientific evidence. While anecdote and some focused statistical research suggests that civil conflict may have worsened in response to recent climate change in developing regions (c.f., Homer-Dixon 1991, 1994; Burke et al. 2009). these claims have been severely criticized by other studies (Nordas&Gleditsch 2007; Buhaug et al. 2010: Buhaug 2010).1 In contrast, long-term macro statistical studies find that conflict increases in periods of climatic chill (Zhang et al. 2006, 2007; Tol& Wagner 2010).2 Research on the more recent past reveals that interstate conflict has declined in the second half of the twentieth century, the very period during which global warming has begun to make itself felt (Goldstein 2002; Levy et al. 2001; Luard 1986, 1988; Hensel 2002; Sarkees, et al. 2003; Mueller 2009).3 While talk of a ''climatic peace” is premature, broader claims that global warming causes conflict must be evaluated in light of countervailing evidence and a contrasting set of causal theoretical claims.4

#### Warming won’t cause war

Lewis 10 – Senior Fellow at the Competitive Enterprise Institute

[Marlo, “The Department of Defense Should Assess the Security Risks of Climate Change Policies”m April 20, http://cei.org/cei\_files/fm/active/0/On%20Point%20-%20Marlo%20Lewis%20-%20Climate%20Change%20and%20National%20Security%20-%20FINAL.pdf]

Instability Accelerant: A Skeptical Perspective. The Quadrennial Defense Review cautions that climate change can weaken fragile governments by increasing the frequency and severity of environmental stresses such as droughts, floods, and disease. Although climate change undoubtedly has this potential, the risks have been highly exaggerated. One of the principal ways in which climate change supposedly undermines stability is by intensifying droughts and water shortages, thus leading to crop failure, famine, and armed conflict. Yet real-world evidence doesn’t support this gloomy prediction. Wendy Barnaby, editor of People & Science, the journal of the British Science Association, wrote a fascinating essay in Nature magazine on this topic.6 But as Barnaby dug into her topic, she discovered that cooperation rather than conflict is the dominant response to shared water resources. Of 1,831 interactions over international fresh water resources spanning five decades, she could not find a single declared war—not even in the conflict-ridden, water-scarce Middle East. Egypt and Jordan have gone to war with Israel several times, but never over water. Rather than fight about water, they cooperate and import “virtual water” in the form of grain. Irrigated agriculture consumes far more water than people consume for personal use. By importing grain, Mideast nations free up scarce water supplies for drinking and bathing. More virtual water flows into the Mideast each year embedded in grain than flows She had been researching a book on the “coming century of water wars.” She assumed that water scarcity is already a significant source of conflict—a pervasive problem just waiting to be “threat multiplied” by climate change. down the Nile to Egyptian farmers. Barnaby concludes her essay by rejecting the fashionable notion that water wars are inevitable in a warming world.7 The most pessimistic (and influential) assessment of the impact of global warming on developing countries is the British government’s Stern Review of the Economics of Climate Change. 8 The Stern Review is famous for the assertion that climate change damages could “rise as high as 20 percent of GDP or more.” This estimate is an outlier in the climate economics literature.9 However, for the sake of argument, let us assume that the Stern Review’s gloomy assessment is correct. Even then, climate change would likely be a bit player in the fate of nations. As economist Indur Goklany shows,10 even if we accept the Stern Review’s 95th-percentile GDP loss estimates under the warmest scenario presented by the United Nations Intergovernmental Panel on Climate Change, developing countries’ net welfare (after accounting for climate change) would increase from $900 per capita in 1990 to $61,500 in 2100 and $86,200 in 2200 (all in 1990 U.S. dollars). For perspective, Goklany notes that, in 2006, GDP per capita was $19,300 for industrialized countries, $30,100 for the United States, and $1,500 for developing countries. In addition to being wealthier, future generations are bound to develop superior technologies in such critical endeavors as agriculture, medicine, water resource management, disaster preparedness, and emergency response.11 Thus, regardless of climate change, it is very likely that global welfare will improve dramatically over the next two centuries, and developing countries’ adaptive capacity will far surpass that of industrial countries today. Therefore, climate change is unlikely to become an important instability accelerant in the decades ahead.

### No Coal Impact

#### Even if you eliminate all coal power in the world, it wouldn’t solve warming

Rapier 12—Chief Technology Officer at Merica International—a Renewable Energy Company, Master’s in Chemical Engineering from Texas A&M University [March 15, 2012, Robert Rapier, Study: Eliminating Coal-Fired Power is Worth 0.2 Degrees in 100 Years, http://www.consumerenergyreport.com/2012/03/05/study-eliminating-coal-fired-power-is-worth-0-2-degrees-in-100-years/]

Who could have dreamed solving climate change would be so easy? A new paper in Environmental Research Letters called “Greenhouse gases, climate change and the transition from coal to low-carbon electricity” concludes that replacement of all of the world’s currently operating coal-fired power plants — which produce about 40% of the world’s electricity — and replacing them with renewable energy would have an impact of 0.2 degrees Celsius 100 years from now.

Cherry-Picking Conclusions According to One’s Viewpoint

However, a number of climate change websites took away a very different message than I took away from the paper. Here is Joe Romm’s view:

Bombshell: You Can’t Slow Projected Warming With Gas, You Need ‘Rapid and Massive Deployment’ of Zero-Carbon Power

I seem to recall another “bombshell” that he recently reported upon on the same theme: Natural Gas Bombshell: Switching From Coal to Gas Increases Warming for Decades, Has Minimal Benefit Even in 2100. I debunked that by showing that in that particular study, every possible alternative — including wind power, solar power, and even simply shutting down all of the coal plants — was projected to increase global warming in the short term: BOMBSHELL: Solar and Wind Power Would Speed Up, Not Reduce, Global Warming.

But Joe is back with the hyperbolic titles and exaggerations (which I get into below), and he missed the biggest story in the paper.

Coal and Sunlight-Reflecting Pollutants

The subject of Romm’s earlier “natural gas bombshell” was a paper written by Tom Wigley that concluded that shutting down coal-fired power plants would cause the global temperature to increase in the short term because of the loss of sunlight-reflecting pollutants.

In that particular paper, Dr. Wigley modeled what would happen if coal-fired power was replaced with natural gas. He did indeed project short-term warming in that scenario, yet it was a result of the air becoming cleaner and allowing sunlight through as the coal was phased out. Thus, the media really got that story wrong, which was not about a deficiency of natural gas, but rather about the peculiarity of burning coal — that the particulate emissions reflect sunlight. Those who fixated on natural gas as the culprit could have written the same story about solar power — which the study’s author confirmed for me. Hence, I made that my “Bombshell” to illustrate the point.

However, that particular study didn’t actually model the temperature impact of shutting down coal plants and replacing them with anything other than natural gas. So, I posed the following question to Dr. Wigley:

What does the graph look like in 2100 if all coal-fired plants were replaced with zero emission sources (as the idealized study)? I am just wondering what the potential actually is. Are we talking about 1 or 2 degrees lower? I just have no idea of the relative context.

We had several email exchanges over his paper, and he said that my questions were intriguing and he would look into them. I never heard back from him on that, but this new paper answers the question.

Shuttering All the World’s Coal Plants Wouldn’t Do Much

The authors of this newest study modeled the replacement of coal-fired power plants with either natural gas, coal with carbon capture and storage, hydropower, solar PV, solar thermal, wind power, or nuclear power. You can see from Joe Romm’s headline how the story is being spun, but let’s break it down in a more objective fashion.

The following graphic from the paper tells the story. Pay particular attention to the temperature scale.

The graphic indicates — as Tom Wigley’s previous paper indicated but which was only reported relative to natural gas — that in every single case, it doesn’t matter what coal-fired power plants are replaced with, the temperature is projected to increase for almost the next 40 years. This is true even in the baseline “Conservation” case, which involves merely idling the coal-fired plants and not replacing them with anything.

The paper projects that if coal-fired power plants continue to operate, the expected temperature rise relative to the baseline (i.e., relative to the expected temperature increase from other sources) in 50 years is 0.15 degrees C, and in 100 years is about 0.33 degrees C. If coal is phased out and replaced with natural gas, the relative 50 and 100 year temperature rise is projected to be 0.14 degrees C and 0.24 degrees C, respectively. So the paper shows slightly less warming when natural gas is used, which Climate Progress Tweeted as “Switch from coal to natural gas would have zero effect on global temperatures by 2100” and included a link to Joe’s “bombshell.” That is obviously an exaggeration, as the graphic clearly shows that the effect is not zero. If it was, the natural gas line would overlay the coal line.

Shocking Implications

One shocking implication from the paper was the projection that hydropower would be worse than coal for the next 60 years. The study’s authors cited methane emissions from organic matter buried under water as the reason for this apparent anomaly. But that’s not the really shocking thing about the study for me.

The most shocking conclusion was the magnitude of the numbers we are talking about. Even if you could in theory shut down all of the coal-fired power plants in the world and replace them with wind, solar, and hydropower — in 50 years the projected temperature is only one-twentieth of a degree C cooler than the base case of continuing to use coal. In 100 years, if I could replace all global coal-fired power plants with firm, renewable power — the temperature is only projected to be about 0.2 degrees cooler than under the coal base case. And the way this is being spun is that the 0.09 degree reduction from switching to natural gas is equivalent to an effect of “zero”, but the 0.2 degree reduction in hypothetically replacing everything with wind and solar power 100 years from now is significant. About the natural gas case, Romm literally said the 0.09 degree lower temperature in switching to natural gas means that “natural gas is a bridge fuel to nowhere”, but the 0.2 degree lower temperature in switching to renewables is “the world’s only plausible hope to avert catastrophic temperature rise.”

Nuclear & Natural Gas to the Rescue — But Most Environmentalists Hate Them

A big irony here is that there are only two power sources that are today capable of achieving the study’s conclusion that we must rapidly replace coal-fired power plants: Nuclear power and natural gas. If people really believe that we must urgently address this issue — and they don’t believe that the change from going to natural gas is enough — that leaves nuclear power as the only option capable of achieving a rapid replacement.

Bear in mind that this is for a global replacement of coal — most of which is used in Asia. Good luck trying to sell China and India on a 0.2 degree temperature difference in 100 years if they quickly abandon their coal-fired power plants and replace them with wind power.

Conclusion: Study is a Major Downer for Activists Battling Climate Change

To be honest, if I was devoting my life to fighting against the threat of climate change, this would be one of the most depressing papers I have ever read. If we could convince everyone in the world to shut down their coal-fired power plants — which we can’t — and replace them with renewable power — which isn’t available in quantities sufficient to replace coal-fired power — then by the end of my life there would still be no statistically significant temperature change to even be able to tell if my life’s work was successful.

But let’s be realistic, shall we? The people who are concerned about global warming have dug in their heels over natural gas, and they are generally opposed to nuclear power. Because of the sheer impossibility that we will rapidly replace coal with wind and solar power (especially since “we” is the world), then we will in all likelihood be left with the status quo. As I have said before, emissions are much higher in Asia Pacific than they are in the U.S. and Europe combined, and they are rising rapidly. Unless we can figure out a way to convince them to develop without fossil fuels — something no country has done — then global carbon emissions will continue to rise. This is why — even though I accept the science behind climate change — it isn’ t my focus. I just don’t see how the West can possibly do anything about it.

### Warming is Slow

#### Warming slow

Fyfe and Meehl 16 – \*PhD in Meteorology, \*\*senior scientist at NOAA

(\*John C, PhD Meteorology, Canadian Centre for Climate Modelling and Analysis, Environment and Climate Change Canada, University of Victoria, Victoria, British Columbia, \*\*Gerald Allen "Jerry" Meehl is a climate scientist who has been a senior scientist at the National Center for Atmospheric Research since 2001, \*\*\*Matthew H. England, physical oceanographer and climate scientist, Professor at the University of New South Wales, \*\*\*\*Michael Mann, Department of Meteorology and Earth and Environmental Systems Institute, Pennsylvania State University, “Making sense of the early-2000s warming slowdown,” Feb 24, Nature Climate Change 6, 224–228 (2016) doi:10.1038/nclimate2938)//cmr

Our results support previous findings of a reduced rate of surface warming over the 2001–2014 period — a period in which anthropogenic forcing increased at a relatively constant rate. Recent research that has identified and corrected the errors and inhomogeneities in the surface air temperature record is of high scientific value. Investigations have also identified non-climatic artefacts in tropospheric temperatures inferred from radiosondes and satellites, and important errors in ocean heat uptake estimates. Newly identified observational errors **do not,** however, **negate the existence of a real reduction in** the surface **warming** rate in the early twenty-first century relative to the 1970s–1990s. This reduction arises through the combined effects of internal decadal variability 11–18, volcanic19,23 and solar activity, and decadal changes in anthropogenic aerosol forcing32. The warming slowdown has motivated substantial research into decadal climate variability and uncertainties in key external forcings. As a result, the scientific community is now better able to explain temperature variations such as those experienced during the early twenty-first century33, and perhaps even to make skilful predictions of such fluctuations in the future. For example, climate model predictions initialized with recent observations indicate a transition to a positive phase of the IPO with increased rates of global surface temperature warming (ref. 34, and G.A. Meehl, A. Hu and H.Teng, manuscript in preparation).In summary, **climate models did not** (on average) reproduce the observed temperature trend over the early twenty-first century6, in spite of the continued increase in anthropogenic forcing. This mismatch focused attention on a compelling science problem — a problem deserving of scientific scrutiny. Based on our analysis, which relies on physical understanding of the key processes and forcings involved, we find that **the rate of warming over the early twenty-first century is slower than that of the previous few decades**. This slowdown is evident in time series of GMST and in the global mean temperature of the lower troposphere. The magnitude and statistical significance of observed trends (and the magnitude and significance of their differences relative to model expectations) depends on the start and end dates of the intervals considered23.Research into the nature and causes of the slowdown has triggered improved understanding of observational biases, radiative forcing and internal variability. This has led to **widespread recognition** that modulation by internal variability is large enough to **produce a significantly reduced rate of surface temperature** increase for a decade or even more — **particularly if internal variability is augmented by the externally driven cooling** caused by a succession of volcanic eruptions. The legacy of this new understanding will certainly outlive the recent warming slowdown. This is particularly true in the embryonic field of decadal climate prediction, where the challenge is to simulate how the combined effects of external forcing and internal variability produce the time-evolving regional climate we will experience over the next ten years35.

### A2 Ozone

#### Stable now and intervening actors solve

Plumer 16 [Brad, senior editor at Vox, “Good news: the hole in the ozone layer is finally starting to heal,” 7/4/16, Vox]

Sometimes the world really can get together and avert a major ecological catastrophe before it's too late. **Case in point**: A new study in Science finds evidence that **the Earth's protective ozone layer is finally healing** — all thanks to global efforts in the 1980s to phase out CFCs and other destructive chemicals. This is one of the great environmental success stories of all time. Back in the 1970s, scientists first realized that we were rapidly depleting Earth's stratospheric ozone layer, which protects us from the sun's harmful ultraviolet rays. The culprit? Chlorofluorocarbons (CFCs), a chemical widely used in refrigerators and air conditioners. These chemicals had already chewed a massive "hole" in the ozone layer above Antarctica, and the damage was poised to spread further north. Without the ozone layer's protection, more and more people would be exposed to UV rays. Skin cancer rates would have soared in many regions, as they already have in Punta Arenas, Chile, which lies under the existing ozone hole. Those UV rays would also harm crops and the marine food chain. Fortunately, this apocalyptic scenario never came to pass. Scientists uncovered the problem in time. And under the 1987 Montreal Protocol, world leaders agreed to phase out CFCs, despite industry warnings that abolishing the chemicals would impose steep costs. **The hole in the ozone layer stopped expanding.** The global economy kept chugging along. Now comes further good news. The latest study, conducted by scientists at MIT and elsewhere, **identifies several "fingerprints" suggesting that the ozone layer is on its way toward actually healing**. The researchers note that the annual ozone hole that appears above Antarctica in September has shrunk by some 4 million square kilometers since 2000, although there are ups and downs each year due to volcanic eruptions.

#### Laundry list of alt causes.

**NOAA No Date** [NOAA, “The Ozone Layer” info page, Accessed 7/19/2011; <http://www.oar.noaa.gov/climate/t_ozonelayer.html>; Boyce]

Ozone-Depleting Substances Certain industrial processes and consumer products result in the atmospheric emission of ozone-depleting gases. These gases contain chlorine and bromine atoms, which are known to be harmful to the ozone layer. Important examples are the CFCs and hydrochlorofluorocarbons (HCFCs), human-produced gases once used in almost all refrigeration and air conditioning systems. These gases eventually reach the stratosphere, where they are broken apart to release ozone-depleting chlorine atoms. Other examples are the halons, which are used in fire extinguishers and which contain ozone-depleting bromine atoms. Methyl bromide, is another important area of research for NOAA scientists. Primarily used as an agricultural fumigant, it is also a significant source of bromine to the atmosphere. Although some ozone-depleting gases also are emitted from natural sources, emissions from human activities exceed those from natural sources. NOAA researchers regularly measure ozone depleting gases in the lower and upper atmosphere and attempt to account for observed changes. As a result of international regulations, ozone-depleting gases are being replaced in human activities with "ozone-friendly" gases that have much reduced potential to deplete ozone. NOAA researchers are also measuring these "substitute" gases as they accumulate in the atmosphere. Observing changes in both old and new gases emitted into the atmosphere allows researchers to improve our understanding of the fate of these gases after release and thereby improve our ability to predict future ozone changes.

#### Alt causes to ground ozone: Asia, wildfires, stratospheric intrusions – all thump the adv.

Lin et al 17 [Meiyun Lin, Research Scholar (with tenure) at NOAA and Princeton University’s Cooperative Institute for Climate Science, Ph.D. from the University of Tokyo, Larry W. Horowitz, NOAA Geophysical Fluid Dynamics Laboratory, Richard Payton, Division Director, Air Quality Assessment Division at the EPA, Arlene M. Fiore, Professor in the Earth and Environmental Sciences dept. at Columbia, where they specialize in Ocean and Climate Physics, has a Ph.D. in Earth and Planetary Sciences from Harvard, and Gail Tonnesen, EPA Air Program, “US surface ozone trends and extremes from 1980 to 2014: quantifying the roles of rising Asian emissions, domestic controls, wildfires, and climate” Atmos. Chem. Phys., 17, 1–28, 2017, http://www.atmos-chem-phys.net/17/2943/2017/acp-17-2943-2017.pdf, wyo-sc]

Within the United States, ground-level O3 has been recognized since the 1940s and 1950s as an air pollutant detrimental to public health. Decreases in summertime O3 were observed in parts of California and throughout the EUS (e.g., Cooper et al., 2012; Simon et al., 2015), following regional NOx controls after the lowering of the US National Ambient Air Quality Standard (NAAQS) for O3 in 1997 to 84 ppb. On the basis of health evidence, the NAAQS level for O3 has been further lowered to 75 ppb in 2008 and to 70 ppb in 2015 (Federal Register, 2015). There are concerns that rising Asian emissions and global methane (Jacob et al., 1999; Lin et al., 2015b), more frequent large wildfires in summer (e.g., Jaffe, 2011; Yang et al., 2015; Abatzoglou et al., 2016), and late spring deep stratospheric O3 intrusions (Lin et al., 2012a, 2015a; Langford et al., 2014) may pose challenges in attaining more stringent O3 standards in high-elevation WUS regions. A warming climate would also offset some of the air quality improvements gained from regional emission controls (e.g., Fiore et al., 2015). Quantitative understanding of sources of O3 variability on daily to multi-decadal timescales can provide valuable information to air quality control managers as they develop O3 abatement strategies under the NAAQS. Here we systemically investigate the response of US surface O3 means and extremes to changes in Asian and North American anthropogenic emissions, global methane, regional heat waves, and wildfires over the course of 35 years from 1980 to 2014, using observations and chemistry-climate model (GFDL-AM3) hindcasts (Lin et al., 2014, 2015a, b). Rapid economic growth has led to a tripling of O3 precursor emissions from Asia in the past 25 years (e.g., Granier et al., 2011; Hilboll et al., 2013). Observed 1 h O3 mixing ratios can frequently reach 200–400 ppb during regional pollution episodes in eastern China (Wang et al., 2006; Li et al., 2016), with a seasonal peak in the late spring to early summer (Wang et al., 2008; Lin et al., 2009). A synthesis of available observations from the mid-1990s to the 2000s indicates increases of 1–2 ppb yr−1 in spring to summer O3 in China (Ding et al., 2008; Ma et al., 2016; Sun et al., 2016). Longrange transport of Asian pollution plumes towards western North America has been identified by aircraft and satellite measurements and in chemical transport models (e.g., Jaffe et al., 1999; Fiore et al., 2009; Brown-Steiner and Hess, 2011; Lin et al., 2012b; Huang et al., 2013; Verstraeten et al., 2015). Systematic comparison of observed and modeled long-term O3 trends over Asia is lacking in the published literature but is needed to establish confidence in models used to assess the global impacts of rising Asian emissions. Model simulations indicate that import of Asian pollution enhances mean WUS surface O3 in spring by ∼ 5 ppb (Zhang et al., 2008; Lin et al., 2012b), and occasionally contributes 8–15 ppb during springtime pollution episodes observed at rural sites (Lin et al., 2012b) as supported by in situ aerosol composition analysis (VanCuren and Gustin, 2015). Stratospheric intrusions can episodically increase daily 8 h average surface O3 by 20–40 ppb, contributing to the highest observed O3 events at high-elevation WUS sites (Lin et al., 2012a, 2015a), in addition to pollution transport from California (e.g., Langford et al., 2010). In the densely populated EUS, both changes in regional anthropogenic emissions and air pollution meteorology have the greatest impacts on summer surface O3 during pollution episodes (e.g., Jacob and Winner 2009; Rieder et al., 2015; Porter et al., 2015; Pusede et al., 2015). Discerning directly the effect of climate change on air quality from long-term observation records of O3 would be ideal, but concurrent trends in precursor emissions and large internal variability in regional climate impede such an effort. It is difficult to separate the impacts of changes in global-to-regional precursor emissions and different meteorological factors on O3 at given locations without the benefit of multiple sensitivity experiments afforded by models.

#### Surface ozone is short lived and natural variability checks their impact

**V**andermeiren 16 [K. Vandermeiren, Director Chemical Safety of the Food Chain at the Veterinary and Agrochemical Research Centre in Brussels, Belgium, H. Harmens, G. Mills and L. De Temmerman, Impacts of Ground Level Ozone on Crop Production in a Changing Climate, 3-16-2016, No Publication, http://www.climate-policy-watcher.org/oxide-emissions-2/impacts-of-groundlevel-ozone-on-crop-production-in-a-changing-climate.html, wyo-sc]

\*note: tropospheric ozone is ground-level ozone

The level of O3 in the troposphere is controlled by a complex set of photochemical reactions involving NOx, carbon monoxide and VOCs (Penkett 1991; United Kingdom Photochemical Oxidants Review Group 1993; Crutzen et al. 1999). Natural sources of NOx (e.g. from soils, lightning and transport from the stratosphere) and VOCs (e.g. from soils and vegetation) ensure that there is always a background concentration of O3 in the troposphere. There is also a contribution from incursions of O3 from the stratosphere, although this is of minor importance in the global budget (Denman et al. 2007). Anthropogenic emissions of large quantities of O3 precursors due to fossil fuel combustion and biomass burning, have substantially increased the amount of O3 since the pre-industrial era. Recent evaluations of surface measurements in the 19th and early 20th century in Europe (Volz and Kley 1988; Harris et al. 1997) clearly indicate much lower O3 concentrations than today. Since O3 is relatively short-lived, lasting for a few days to weeks in the atmosphere, ground-level distributions are highly variable and tied to the abundance of its forerunner compounds, water vapour and sunlight. Trends in anthropogenic emissions of O3 precursors (1990-2000) show reductions in industrialised regions like the USA and Organisation for Economic Co-operation and Development (OECD) Europe, while regions dominated by developing countries show significant growth in emissions (Forster et al. 2007) which has repercussions on the global O3 distribution. The boundary layer O3 concentrations show strong diurnal and seasonal cycles with daytime and summertime maxima. O3 episodes are associated with hot sunny weather and occur over wide areas; peak concentrations occur mainly during the afternoon, when photochemical O3 production is most active. At night time, however, in the absence of significant O3 formation, the O3 concentration may fall due to reactions with NO and through deposition to the surface, which is the major sink for O3 at rural sites. Moreover, sites that experience the same regional O3 distribution, may have different exposure levels due to different local features, such as elevation, wind speed, roughness of the earth's surface (Derwent and Kay 1988).

#### Ozone hole healing now.

National Geographic, 6/30/2016. “Remember the Ozone Hole? Now There's Proof It's Healing,” <http://news.nationalgeographic.com/2016/06/antarctic-ozone-hole-healing-fingerprints/>.

After three decades of observation, scientists have finally found the first fingerprints of healing in the notorious Southern Hemisphere ozone hole. In 1974, Mario Molina and Sherwood Rowland, two chemists at the University of California, Irvine, published an article in Nature detailing the threats to the ozone layer from chlorofluorocarbon (CFC) gases. At the time, CFCs were commonly used in spray bottles and as coolants in many refrigerators, and they were rapidly accumulating in the atmosphere. The groundbreaking research—for which they were awarded the 1995 Nobel Prize in chemistry—concluded that the atmosphere only had a “finite capacity for absorbing chlorine” atoms in the stratosphere. After being widely attacked by the chemical industry, Molina and Rowland’s work was vindicated 11 years later, in 1985, when a team of English scientists realized the dire implications of their findings: the CFCs in the atmosphere had created a hole in the ozone layer. The loss of the protective ozone can lead to increased rates of skin cancer in humans and animals. The Emergence of Healing The research team, led by Susan Solomon, a professor of atmospheric chemistry and climate science at MIT, found multiple lines of evidence for the healing. The findings were published Thursday in Science. The ozone hole forms every year over Antarctica, beginning in August and generally peaking in October. Solomon's team compared September ozone measurements, collected from balloon data and satellites, with statistical simulations that predict ozone. Solomon’s team found that, in recent years, the hole is not eclipsing the 12-million-square-kilometer threshold until later in the southern spring, which indicates that the September hole is shrinking. In fact, the researchers believe the ozone hole has shrunk by more than 4 million square kilometers. Furthermore, the hole is not as deep as it used to be. “The fact that the ozone hole is opening later is really the key here,” says Solomon. “It is opening later, it is smaller, and its depth is depleted. All of the measurements are independent, and when they all point to this [healing], it is hard to imagine any other explanation.” The researchers also found that the observations matched model predictions, and that more than half the shrinkage could be traced to the reduction in atmospheric chlorine. According to Donald Blake, a professor of chemistry at the University of California, Irvine, the research represents the most complete study of polar ozone to date. Tackling the Problem In the 1980s, ozone in the atmosphere dropped like a rock at the initial onset of the affliction. The implementation of the 1987 Montreal Protocol—widely considered a triumph of international cooperation—quickly phased out industrial CFCs, and the ozone layer stabilized, though it was still at a depleted level. The size of the ozone hole varies from year to year, influenced by changes in meteorology and volcanism, which can make it difficult to identify a healing trend. Scientists believe it has remained relatively stable since the turn of the century, but the October 2015 hole was the largest on record. Scientists have long thought the ozone layer was recovering slowly, but Solomon and her team—comprising researchers from MIT, the National Center for Atmospheric Research, and the University of Leeds—are the first to rigorously uncover evidence of the healing. Though the size of the 2015 hole was unusual, Solomon attributes it largely to the April 2015 eruption of the Calbuco volcano in Chile. Though volcanoes do not spew chlorine molecules into the atmosphere, their contribution of small particles increases the number of polar stratospheric clouds that react with human-made chlorine. Future Implications These findings suggest that ozone healing is right on pace with the expected timeline. As Blake explained, this shows that the gases that affect ozone are decreasing in the atmosphere.

#### No impact to ozone depletion and it isn't anthropogenic - reject their evidence

Singer 10 Siegfried Fred Singer is an Austrian-born American physicist and emeritus professor of environmental science at the University of Virginia. " The Ozone-CFC Debacle: Hasty Action, Shaky Science," The Heartland Institute, Nov 30, http://heartland.org/policy-documents/ozone-cfc-debacle-hasty-action-shaky-science

Yet in spite of the hardships caused by the hasty phaseout of CFCs and other suspected ozone-depleting halocarbons, the EPA has never questioned the adequacy of the science that forms the basis for its phaseout policy. The facts are that the scientific underpinnings are quite shaky: the data are suspect; the statistical analyses are faulty; and the theory has not been validated (3,4). The science simply does not support this premature and abrupt removal of widely used chemicals -- at great cost to the economy. This fact seems finally to have been recognized by legislators; in early 1995, Republican Congressman from Texas, Tom Delay, introduced a bill, H.R. 475, to repeal the provisions in Title VI of the 1990 Clean Air Act regulating the production and use of CFCs.¶ If one examines the history of governmental CFC policy, one finds that it is based mainly on panicky reactions to press releases from EPA, National Aeronautics and Space Administration (NASA), and National Oceanographic and Atmospheric Administration (NOAA) about skin cancer and possible Arctic ozone holes -¬ stimulated and amplified by environmental pressure groups and the media ¬- rather than on published work that has withstood the scrutiny of scientific peers. Credence has been given to EPA "estimates" of millions of extra skin cancer deaths, to lurid stories about ozone depletion leading to blind sheep, to the travails of whales in the Antarctic, and to the worldwide disappearance of frogs and toads. It is perhaps characteristic of this topic that so many of the scary announcements have led off with some statement like: "The depletion of ozone is worse than expected" -¬ starting with the March 1988 press conference by the Ozone Trends Panel (5). Yet since "expectation" must be based on theory, the discrepancy with observations means, logically, that either the theory is wrong or the data are wrong, or both are wrong!¶ For the general public, and even for the trained scientist, these scientific controversies are difficult to sort out. It is indeed a multi-faceted problem, a chain with many links connecting the release of CFCs into the atmosphere with the occurrence of skin cancer. Briefly, the steps are postulated as follows (6):¶ 1. CFCs with lifetimes of decades and longer become well-mixed in the atmosphere, percolate into the stratosphere, and there release chlorine. ¶ 2. Chlorine, in its active form, can destroy ozone catalytically and thereby lower its total amount in the stratosphere. ¶ 3. A reduced level of ozone results in an increased level of solar ultraviolet radiation reaching the surface of the earth. ¶ 4. Exposure to increased UV leads to increases in skin cancer.¶ Each of these four steps is controversial, has not been sufficiently substantiated, and may even be incorrect (7,8). One can reasonably conclude that policy is rushing far ahead of the science.¶ Scientific Uncertainties and Controversies¶ It is generally agreed that natural sources of tropospheric chlorine (volcanoes, ocean spray, etc.) are four to five orders of magnitude larger than man-made sources (9). But it is what gets into the stratosphere that counts. The debate has degenerated into arguing about how much chlorine is rained out in the lower atmosphere (10) rather than measuring whether stratospheric chlorine is actually increasing. ¶ Contrary to the claims of some skeptics, CFCs do indeed reach the stratosphere; the secular increase of fluorine, in the form of HF, as reported by Belgian researcher R. Zander, may be sufficient proof (11,12). But as late as 1987, Zander found no long-term increase in HCl, suggesting that stratospheric chlorine comes mostly from natural sources, which are not expected to increase over time. The situation changed in 1991, however, when NASA scientist C. Rinsland published data showing HCl increasing at about half the rate of HF, suggesting both natural and man-made sources (13). Yet the Montreal Protocol to freeze CFC production and roll it back to lower levels was signed in 1987, at a time when published work still indicated little, if any, contribution from CFCs.¶ (Earlier aircraft-based observations of HCl increases between 1978 and 1982 by NCAR researchers Mankin and Coffey (14) were used to justify a CFC phaseout, even as late as 1993 (15,16), in spite of the fact that their data series was judged to be of poor quality and too short; according to MIT Professor Prinn, their published rate of increase of stratospheric chlorine could well be close to zero, in agreement with Zander's 1987 result (17). In any case, Mankin and Coffey themselves ascribe their observed 1982 increase to the volcano E1 Chichon (18) rather than to CFCs).¶ The question of global ozone depletion has been bedeviled by doubts about the quality of the data. Readings from Dobson ground observatories can be contaminated by long-term trends in SO2 pollution of the lower atmosphere. DeMuer and DeBacker have demonstrated that the Dobson ozone meter can misinterpret the downward trend of SO2 pollution, giving rise to a "fictitious" ozone trend (19). (Their finding was confirmed by a task group, chaired by Robert T. Watson, in a Joint Workshop of the IPCC and the International Ozone Assessment Panel in May 1993).¶ Another, quite separate problem is produced by the extreme noisiness of the ozone record. To establish the existence of a small, long-term trend it is necessary to eliminate the large natural variations, especially also those correlated with the 11-yr sunspot cycle. This is an impossible task given the shortness of the record and the virtual absence of data on long-term variations of the solar far-UV radiation that produces ozone in the upper atmosphere. The analysis fails a simple test: The "trend" is found to depend strongly on the choice of time interval (20). An additional problem in identifying a man-made trend arises from long-term trends in sunspot number, and therefore long-term ozone trends of natural origin (21).¶ Thus, the issue of whether the global ozone layer shows a steadily depleting trend is still controversial. Satellite data on global ozone content are not subject to interference from low-altitude pollution, but long-term calibration drift presents a problem; the TOMS data from satellites appear to have a calibration drift due to nonlinearities in the photomultiplier (22). In any case, the shortness of the record, 1979 to present, makes the solar-cycle correction problematic (23).¶ The Antarctic ozone "hole", an annual short-lived thinning of the layer first identified in 1985, is a genuine phenomenon whose intensity has increased markedly since about 1978. Its proximate cause is unquestionably stratospheric chlorine, but its fate may be controlled more by climate factors and the presence of particulates than by the concentration of chlorine itself (24); the hole may persist even if the chlorine level were to drop below the 1978 value. In any case, no theoretical predictions exist that can be tested by future observations.¶ Nor is the CFC-ozone theory itself in good shape. Over the years, its predictions for long-term, global ozone depletion have varied widely; during the early eighties the National Academy of Sciences published values that gradually decreased from 18% down to 3%. Since the discovery of the ozone hole, there have been no further quantitative predictions published because it was recognized that the existing theory could not cope with the heterogeneous destruction processes that depended more on particulate surface area than on the level of chlorine (25,26).¶ The theory could not describe ozone variations caused by the (heterogeneous) reactions on particulates (volcanic debris, aerosols, etc.) in the lower stratosphere and therefore was not able to predict the Antarctic ozone hole.. In the upper stratosphere, where only gas-phase (homogeneous) reactions take place, the theory predicts larger changes than are actually observed (27).¶ There is marked disagreement also among the satellite ozone data (28): In the upper stratosphere, trends seen by the SBUV instrument are negative, while SAGE I and II data show slightly positive trend values; in the lower stratosphere SAGE shows much larger decreases than SBW¬up to 3%-6%/yr in the equatorial region, a result that is difficult to explain from CFC theory.¶ In the lower stratosphere, recent model calculations and observations indicate that chlorine-based ozone destruction may be rate-limited by the amounts of OH and HO2 radicals (29,30). If borne out, then increasing stratospheric water vapor -¬ as a result of rising tropospheric methane from human activities, such as cattle raising and rice growing ¬- could play a significant role in ozone chemistry (31).¶ Concerns About Skin Cancer¶ The major public concern about a possible depletion of ozone comes from the fear that solar UV-B (280-320 nm) radiation reaching the surface will increase, typically by 10%. Yet UV-B intensity increases naturally by about 5000% between pole and equator; there is less ozone traversed when the sun is closer to the zenith (32). Hence a 10% increase at mid-latitudes translates into moving 60 miles (100 km) to the south, hardly a source for health concerns. ¶ There has been, of course, a determined search for a secular increase in UV-B to match the presumed depletion of ozone. But no such trends had been observed (33) until publication in November 1993 of a startling increasing trend, between 1989 and 1993, over Toronto, Canada (34). Close examination, however, revealed that this "smoking gun" was mostly smoke. The authors confused a short-lived increase at the end of their record with a long-term trend (35).¶ The driving force behind the policy to phase out CFCs has always been the fear of skin cancer, particularly malignant melanoma. The EPA has predicted 3 million additional skin cancer deaths by the year 2075 as a result of ozone depletion (36,37). But unlike basal and squamous cell skin cancers, which are easily cured growths caused by long-term exposure to UV-B, melanoma does not show the same characteristic increase towards lower latitudes (38) (Surprisingly, European data on melanoma incidence show a reverse latitude effect).¶ It is clear therefore that the rising incidence of melanoma over the past 50 yr cannot be due to any changes in the ozone layer. Non-melanoma (basal cell and squamous cell) skin cancers are clearly linked to chronic exposures to UV-B, as judged from the increasing incidence towards lower latitudes; melanoma exhibits a different epidemiology and often occurs on areas of the body not chronically exposed to the sun. Yet the clear link to solar exposure suggests that changes in lifestyle leading to greater exposure to the sun may be the main cause of melanoma.¶ A breakthrough in our understanding of the mechanism of melanoma induction came with the experiments of Dr. Richard Setlow and colleagues at the Brookhaven National Laboratory. To measure the action spectrum of UV radiation for melanoma induction, they exposed hybrids of the fish genus Xiphophorus to specific wavelengths in the UV-A and UV-B range. The animals had been back-cross bred to have only one tumor-suppressor gene; inactivation of this gene in a melanoblast or melanocyte then permits the melanoma to develop (39).. The experimenters found that the action spectrum (sensitivity per quantum) was reasonably flat across the UV-B and UV-A regions. Because of the much greater number of UV-A photons, they conclude that 90%-95% of melanomas are caused by UV-A (40).¶ But UV-A is not absorbed by ozone at all, and therefore melanoma rates would not be affected by changes in stratospheric ozone. This important finding undercuts one of the main reasons for the Montreal Protocol and all subsequent regulations (41).

### A2 Acidification

#### Ocean ecosystems have been stable through previous drastic climate changes

Robert Monroe ’16, cites a study by: \*Elizabeth Sibert: PhD candidate at Scripps, \*\*Richard Norris, Professor of Paleobiology at Scripps, \*\*\*Jose Cuevas, undergraduate research assistant at Scripps, \*\*\*\*Lana Graves, Scripps, “Research Highlight: Ocean Ecosystem Structure Stable for Tens of Millions of Years, with Occasional Rapid Changes,” *Scripps Oceanography*, 6/7/16, <https://scripps.ucsd.edu/news/research-highlight-ocean-ecosystem-structure-stable-tens-millions-years-occasional-rapid>

Scientists reviewing 85 million years of fish fossil records say that the basic structure of the ocean ecosystem – the ratio of bony fish compared to elasmobranchs such as sharks, skates, and rays – has remained stable for periods of tens of millions of years, despite extreme environmental changes caused by past climate shifts of the past. Scripps Institution of Oceanography at UC San Diego graduate student Elizabeth Sibert led an analysis of microscopic fossil fish teeth and mineralized shark scales (known as denticles) that were preserved in seafloor sediments on the seafloor for millions of years. The team found that there have been two times when the make-up of ocean life changed substantially. One of those events was the Cretaceous/Palaeogene mass extinction 66 million years ago to which scientists associate with the disappearance of dinosaurs. Sibert and colleagues had earlier found that the abundance and diversity of fishes exploded soon after many of their main predators went extinct. Shark abundance, however, neither rose nor fell after the extinction. For the next 45 million years, the ratio of sharks and fishes remained stable, while absolute abundances of both groups rose and fell in concert with climate change episodes such as the Eocene greenhouse 50 million years ago and the Eocene-Oligocene glaciation 34 million years ago, suggesting that the structure of the ecosystem was resilient to climate change. Twenty million years ago, there was a second transition, with a sharp drop-off in the number of sharks in the world’s oceans, alongside a dramatic increase in variability of fish abundance. The researchers conclude that what triggered changes in the community structure has to do primarily with how competition with other marine organisms – including plankton, invertebrates, seabirds, and marine mammals – influenced the balance of life in the oceans. “It is really striking that the community structure is so stable during each of these long intervals,” said Sibert, whose research is supported through a National Science Foundation Graduate Research Fellowship. “It shows that it takes a major disaster or evolutionary regime shift to change fundamentally how the consumers in the ocean interact.” The study, “Eighty-five million years of Pacific Ocean Gyre ecosystem structure: long-term stability marked by punctuated change,” appeared in the May 18 edition of the journal Proceedings of the Royal Society B. The researchers concluded that drastic swings in global climate, including periods of intense warming analogous to what Earth is experiencing at present, did little to alter the long-term structure of the marine vertebrate community. Sibert said those episodes from prehistory, though, do not serve as a guide for potential changes in marine ecosystem structure today, since the rate of today’s modern global climate change is much faster than anything experienced in the past, and the impact of human interactions with the oceans has no precedent. Sibert’s co-author, Scripps paleobiologist Richard Norris, said that the transition from Cretaceous oceans to Paleogene oceans 66 million years ago saw the disappearance of highly abundant invertebrate organisms called ammonites. Their mass extinction released fishes from predation and allowed them to explode in abundance in the warm greenhouse world of the Paleogene. Later, in the modern ocean system, the evolutionary diversification of marine mammals, seabirds and large pelagic fish that compete with sharks, alongside the dramatic increase in variability of fish production, may have driven shark abundance down in the open ocean.

#### Ocean acidification thesis wrong – won’t cause extinction, C02 actually helps, and alt causes outweigh

Ridley ’12 – BA and PhD from Oxford (worked for the Economist for nine years as science editor, Washington correspondent and American editor, before becoming a self-employed writer and businessman, “Taking Fears of Acid Oceans With a Grain of Salt”, Jan 7, <http://online.wsj.com/article/SB10001424052970203550304577138561444464028.html>, )

Coral reefs around the world are suffering badly from overfishing and various forms of pollution. Yet many experts argue that the greatest threat to them is the acidification of the oceans from the dissolving of man-made carbon dioxide emissions. The effect of acidification, according to J.E.N. Veron, an Australian coral scientist, will be "nothing less than catastrophic.... What were once thriving coral gardens that supported the greatest biodiversity of the marine realm will become red-black bacterial slime, and they will stay that way." This is a common view. The Natural Resources Defense Council has called ocean acidification "the scariest environmental problem you've never heard of." Sigourney Weaver, who narrated a film about the issue, said that "the scientists are freaked out." The head of the National Oceanic and Atmospheric Administration calls it global warming's "equally evil twin." But do the scientific data support such alarm? Last month scientists at San Diego's Scripps Institution of Oceanography and other authors published a study showing how much the pH level (measuring alkalinity versus acidity) varies naturally between parts of the ocean and at different times of the day, month and year. "On both a monthly and annual scale, even the most stable open ocean sites see pH changes many times larger than the annual rate of acidification," say the authors of the study, adding that because good instruments to measure ocean pH have only recently been deployed, "this variation has been under-appreciated." Over coral reefs, the pH decline between dusk and dawn is almost half as much as the decrease in average pH expected over the next 100 years. The noise is greater than the signal. Another recent study, by scientists from the U.K., Hawaii and Massachusetts, concluded that "marine and freshwater assemblages have always experienced variable pH conditions," and that "in many freshwater lakes, pH changes that are orders of magnitude greater than those projected for the 22nd-century oceans can occur over periods of hours." This adds to other hints that the ocean-acidification problem may have been exaggerated. For a start, the ocean is alkaline and in no danger of becoming acid (despite headlines like that from Reuters in 2009: "Climate Change Turning Seas Acid"). If the average pH of the ocean drops to 7.8 from 8.1 by 2100 as predicted, it will still be well above seven, the neutral point where alkalinity becomes acidity. The central concern is that lower pH will make it harder for corals, clams and other "calcifier" creatures to make calcium carbonate skeletons and shells. Yet this concern also may be overstated. Off Papua New Guinea and the Italian island of Ischia, where natural carbon-dioxide bubbles from volcanic vents make the sea less alkaline, and off the Yucatan, where underwater springs make seawater actually acidic, studies have shown that at least some kinds of calcifiers still thrive—at least as far down as pH 7.8. In a recent experiment in the Mediterranean, reported in Nature Climate Change, corals and mollusks were transplanted to lower pH sites, where they proved "able to calcify and grow at even faster than normal rates when exposed to the high [carbon-dioxide] levels projected for the next 300 years." In any case, freshwater mussels thrive in Scottish rivers, where the pH is as low as five. Laboratory experiments find that more marine creatures thrive than suffer when carbon dioxide lowers the pH level to 7.8. This is because the carbon dioxide dissolves mainly as bicarbonate, which many calcifiers use as raw material for carbonate. Human beings have indeed placed marine ecosystems under terrible pressure, but the chief culprits are overfishing and pollution. By comparison, a very slow reduction in the alkalinity of the oceans, well within the range of natural variation, is a modest threat, and it certainly does not merit apocalyptic headlines.

### A2 Biodiversity

#### No impact – humans can survive post-collapse and there’s no relationship between survival and biodiversity – their authors use flawed data analysis

Hough 14 [Rupert, Environmental Scientist with Expertise in Risk Modelling and Exposure Assessment and PhD from Nottingham University, February, “Biodiversity and human health: evidence for causality?” Biodiversity and Conservation, Vol. 23 No. 2, pg. 272-3/AKG]

Large country-level assessments (e.g. MEA 2005; Huynen et al. 2004; Sieswerda et al. 2001) must be interpreted with some caution. Data measured at country-level are likely to mask regional and local-level effects. Apart from the fact that there are limitations to regression analysis in providing any proof of causality, least squares regression models assume linear relationships between reductions in biodiversity and human health and thus imply a linear relationship between loss of biodiversity and the provision of relevant ecosystem goods and services. A number of authors, however, have suggested that ecosystems can lose a proportion of their biodiversity without adverse consequences to their functioning (e.g. Schwartz et al. 2000). Only when a threshold in the losses of biodiversity is reached does the provision of ecosystem goods and services become compromised. These models also tend to assume a positive relationship between socio-economic development and loss of biodiversity. One problem with this expectation is that the loss in biodiversity in one country is not per definition the result of socio-economic developments in that particular country, but could also be the result of socio-economic developments in other parts of the world (Wackernagel and Rees 1996). Furthermore, the use of existing data means researchers can only make use of available indicators. Unlike for human health and socio-economic development, there are no broadly accepted core-set of indicators for biodiversity (Soberon et al. 2000). The lack of correlation between biodiversity indicators (Huynen et al. 2004) shows that the selected indicators do not measure the same thing, which hinders interpretation of results. Finally, there is likely to be some sort of latency period between ecosystem imbalance and any resulting health consequences. To date, this has not been investigated using regression approaches. Finally, it is thought that provisioning services are more crucial for human health and well-being that other ecosystem services (Raudsepp-Hearne et al. 2010). Trends in measures of human well-being are clearly correlated with food provisioning services, and especially with meat consumption (Smil 2002). While \*60 % of the ecosystem services assessed by the MEA were found to be in decline, most of these were regulating and supporting services, whereas the majority of expanding services were provisioning services such as crops, livestock and aquaculture (MEA 2005). Raudsepp-Hearne et al. (2010) investigated the impacts on human well-being from decreases in non-food ecosystem services using national-scale data in order to reveal human well-being trends at the global scale. At the global scale, forest cover, biodiversity, and fish stocks are all decreasing; while water crowding (a measure of how many people shared the same flow unit of water placing a clear emphasis on the social demands of water rather than physical stress (Falkenmark and Rockstro¨m 2004)), soil degradation, natural disasters, global temperatures, and carbon dioxide levels are all on the rise, and land is becoming increasingly subject to salinization and desertification (Bennett and Balvanera 2007). However, across countries, Raudsepp-Hearne et al. (2010) found no correlation between measures of wellbeing and the available data for non-food ecosystem services, including forest cover and percentage of land under protected-area status (proxies for many cultural and regulating services), organic pollutants (a proxy for air and water quality), and water crowding index (a proxy for drinking water availability, Sieswerda et al. 2001; WRI 2009) This suggests there is no direct causal link between biodiversity decline and health, rather the relationship is a ‘knock-on’ effect. I.e. if biodiversity decline affects mankind’s ability to produce food, fuel and fibre, it will therefore impact on human health and well-being. As discussed in the introduction, the fact that humans need food, water and air to live is an obvious one. All these basic provisions can be produced in a diversity-poor environment. Therefore, to understand whether there is a potential causality relationship between biodiversity in its own right and human health, we need to move beyond the basic provisioning services.

#### Bio-d’s past the tipping point – tons of alt causes

Gaworecki 16 (Mike, New York-based journalist who writes about energy, climate, and forest issues, ““Ecological recession”: Researchers say biodiversity loss has hit critical threshold across the globe,” Mongabay, July 25, 2016, https://news.mongabay.com/2016/07/ecological-recession-researchers-ring-the-alarm-as-biodiversity-loss-hits-critical-threshold-across-the-globe/)

An international team of researchers has concluded that biodiversity loss has become so severe and widespread that it could affect Earth’s ability to sustain human life. The researchers examined 2.38 million records of 39,123 terrestrial species collected at 18,659 sites around the world to model the impacts on biodiversity of land use and other pressures from human activities that cause habitat loss. They then estimated down to about the one-square-kilometer level the extent to which those pressures have caused changes in local biodiversity, as well as the spatial patterns of those changes. They found that, across nearly 60 percent of Earth’s land surface, biodiversity has declined beyond “safe” levels as defined by the planetary boundaries concept, which seeks to quantify the environmental limits within which human society can be considered sustainable. “We estimate that land use and related pressures have already reduced local biodiversity intactness — the average proportion of natural biodiversity remaining in local ecosystems — beyond its recently proposed planetary boundary across 58.1% of the world’s land surface, where 71.4% of the human population live,” the researchers write in an article published this month in the journal Science. In other words, more than 70 percent of the global population lives in areas where the level of biodiversity loss has been so substantial that the ability of ecosystems to support humanity is now in question. Biodiversity intactness has already sunk below the safe planetary boundary in most biomes, but grasslands, savannas, and shrublands were found to have been hit the hardest, with biodiversity hotspots such as forests and woodlands following close behind. Levels of biodiversity loss are so high, the researchers said, that they could even undermine plans to continue developing the world’s economies without destroying precious natural resources. “Such widespread transgression of safe limits suggests that biodiversity loss, if unchecked, will undermine efforts toward long-term sustainable development,” the authors of the Science article added. “It’s worrying that land use has already pushed biodiversity below the level proposed as a safe limit,” Andy Purvis, a professor in the Department of Life Sciences at Imperial College London and a co-author of the study, said in a statement. “Decision-makers worry a lot about economic recessions, but an ecological recession could have even worse consequences — and the biodiversity damage we’ve had means we’re at risk of that happening. Until and unless we can bring biodiversity back up, we’re playing ecological roulette.” Purvis and team said that it is possible proactive conservation could prevent future losses. They’ve made the maps from their paper and all of the underlying data publicly available in the hope that their results will be used to inform conservation policy at the national and international level. “The greatest changes have happened in those places where most people live, which might affect physical and psychological wellbeing,” Dr. Tim Newbold of the University College London, the lead author of the study, said in a statement. “To address this, we would have to preserve the remaining areas of natural vegetation and restore human-used lands.”

#### No environment impact – tipping points are wrong and we don’t need biodiversity to survive

Brook ’15 (Barry Brook – PhD in Population Viability Analysis and Conservation Biology @ Macquarie University, Australian Laureate Professor and Chair of Environmental Sustainability at the University of Tasmania, former Director of Climate Science at the Environment Institute, “The Limits of Planetary Boundaries 2.0,” 16 January 2015, https://bravenewclimate.com/2015/01/16/the-limits-of-planetary-boundaries-2-0/)

Steffen et al (2015) revise the “planetary boundaries framework” initially proposed in 2009 as the “safe limits” for human alteration of Earth processes(Rockstrom et al 2009). Limiting human harm to environments is a major challenge and we applaud all efforts to increase the public utility of global-change science. Yet the planetary boundaries (PB) framework – in its original form and as revised by Steffen et al – obscures rather than clarifies the environmental and sustainability challenges faced by humanity this century. Steffen et al concede that “not all Earth system processes included in the PB have singular thresholds at the global/continental/ocean basin level.” Such processes include biosphere integrity (see Brook et al 2013), biogeochemical flows, freshwater use, and land-system change. “Nevertheless,” they continue, “it is important that boundaries be established for these processes.” Why? Where a global threshold is unknown or lacking, there is no scientifically robust way of specifying such a boundary – determining a limit along a continuum of environmental change becomes a matter of guesswork or speculation (see e.g. Bass 2009;Nordhaus et al 2012). For instance, the land-system boundary for temperate forest is set at 50% of forest cover remaining. There is no robust justification for why this boundary should not be 40%, or 70%, or some other level. While the stated objective of the PB framework is to “guide human societies” away from a state of the Earth system that is “less hospitable to the development of human societies”, it offers little scientific evidence to support the connection between the global state of specific Earth system processes and human well-being. Instead, the Holocene environment (the most recent 10,000 years) is assumed to be ideal. Yet most species evolved before the Holocene and the contemporary ecosystems that sustain humanity are agroecosystems, urban ecosystems and other human-altered ecosystems that in themselves represent some of the most important global and local environmental changes that characterize the Anthropocene. Contrary to the authors’ claim that the Holocene is the “only state of the planet that we know for certain can support contemporary human societies,” the human-altered ecosystems of the Anthropocene represent the only state of the planet that we know for certain can support contemporary civilization. Human alteration of environments produces multiple effects, some advantageous to societies, such as enhanced food production, and some detrimental, like environmental pollution with toxic chemicals, excess nutrients and carbon emissions from fossil fuels, and the loss of wildlife and their habitats. The key to better environmental outcomes is not in ending human alteration of environments but in anticipating and mitigating their negative consequences. These decisions and trade-offs should be guided by robust evidence, with global-change science investigating the connections and tradeoffs between the state of the environment and human well-being in the context of the local setting, rather than by framing and reframing environmental challenges in terms of untestable assumptions about the virtues of past environments. Even without specifying exact global boundaries, global metrics can be highly misleading for policy. For example, with nitrogen, where the majority of human emissions come from synthetic fertilizers, the real-world challenge is to apply just the right amount of nitrogen to optimize crop yields while minimizing nitrogen losses that harm aquatic ecosystems. Reducing fertilizer application in Africa might seem beneficial globally, yet the result in this region would be even poorer crop yields without any notable reduction in nitrogen pollution; Africa’s fertilizer use is already suboptimal for crop yields. What can look like a good or a bad thing globally can prove exactly the opposite when viewed regionally and locally. What use is a global indicator for a local issue? As in real estate, location is everything.

#### Resiliency empirically checks environmental damage. Our evidence cites the largest data sets.

Kareiva et al. 11—Peter Kareiva is a Breakthrough Institute Senior Fellow and chief scientist and vice president of The Nature Conservancy as well as a member of the National Academy of Sciences. Robert Lalasz is director of science communications for The Nature Conservancy. He is founding editor of the Conservancy's blog, “Cool Green Science.” Michelle Marvier is professor and department chair of Environmental Studies and Sciences at Santa Clara University. [Fall, 2011, “Conservation in the Anthropocene,” *Breakthrough Journal*, No. 2, http://breakthroughjournal.org/content/authors/peter-kareiva-robert-lalasz-an-1/conservation-in-the-anthropoce.shtml]

As conservation became a global enterprise in the 1970s and 1980s, the movement's justification for saving nature shifted from spiritual and aesthetic values to focus on biodiversity. Nature was described as primeval, fragile, and at risk of collapse from too much human use and abuse. And indeed, there are consequences when humans convert landscapes for mining, logging, intensive agriculture, and urban development and when key species or ecosystems are lost.

But ecologists and conservationists have grossly overstated the fragility of nature, frequently arguing that once an ecosystem is altered, it is gone forever. Some ecologists suggest that if a single species is lost, a whole ecosystem will be in danger of collapse, and that if too much biodiversity is lost, spaceship Earth will start to come apart. Everything, from the expansion of agriculture to rainforest destruction to changing waterways, has been painted as a threat to the delicate inner-workings of our planetary ecosystem.

The fragility trope dates back, at least, to Rachel Carson, who wrote plaintively in *Silent Spring* of the delicate web of life and warned that perturbing the intricate balance of nature could have disastrous consequences.22 Al Gore made a similar argument in his 1992 book, Earth in the Balance.23 And the 2005 Millennium Ecosystem Assessment warned darkly that, while the expansion of agriculture and other forms of development have been overwhelmingly positive for the world's poor, ecosystem degradation was simultaneously putting systems in jeopardy of collapse.24

The trouble for conservation is that the data simply do not support the idea of a fragile nature at risk of collapse. Ecologists now know that the disappearance of one species does not necessarily lead to the extinction of any others, much less all others in the same ecosystem. In many circumstances, the demise of formerly abundant species can be inconsequential to ecosystem function. The American chestnut, once a dominant tree in eastern North America, has been extinguished by a foreign disease, yet the forest ecosystem is surprisingly unaffected. The passenger pigeon, once so abundant that its flocks darkened the sky, went extinct, along with countless other species from the Steller's sea cow to the dodo, with no catastrophic or even measurable effects.

These stories of resilience are not isolated examples -- a thorough review of the scientific literature identified 240 studies of ecosystems following major disturbances such as deforestation, mining, oil spills, and other types of pollution. The abundance of plant and animal species as well as other measures of ecosystem function recovered, at least partially, in 173 (72 percent) of these studies.25

#### The environment is resilient and ecosystem loss doesn’t cascade

Kareiva et al 12 – Chief Scientist and Vice President, The Nature Conservancy (Peter, Michelle Marvier **--**professor and department chair of Environment Studies and Sciences at Santa Clara University, Robert Lalasz **--** director of science communications for The Nature Conservancy, Winter, “Conservation in the Anthropocene,” http://thebreakthrough.org/index.php/journal/past-issues/issue-2/conservation-in-the-anthropocene/)

2. As conservation became a global enterprise in the 1970s and 1980s, the movement's justification for saving nature shifted from spiritual and aesthetic values to focus on biodiversity. Nature was described as primeval, fragile, and at risk of collapse from too much human use and abuse. And indeed, there are consequences when humans convert landscapes for mining, logging, intensive agriculture, and urban development and when key species or ecosystems are lost.¶ But ecologists and conservationists have grossly overstated the fragility of nature, frequently arguing that once an ecosystem is altered, it is gone forever. Some ecologists suggest that if a single species is lost, a whole ecosystem will be in danger of collapse, and that if too much biodiversity is lost, spaceship Earth will start to come apart. Everything, from the expansion of agriculture to rainforest destruction to changing waterways, has been painted as a threat to the delicate inner-workings of our planetary ecosystem.¶ The fragility trope dates back, at least, to Rachel Carson, who wrote plaintively in Silent Spring of the delicate web of life and warned that perturbing the intricate balance of nature could have disastrous consequences.22 Al Gore made a similar argument in his 1992 book, Earth in the Balance.23 And the 2005 Millennium Ecosystem Assessment warned darkly that, while the expansion of agriculture and other forms of development have been overwhelmingly positive for the world's poor, ecosystem degradation was simultaneously putting systems in jeopardy of collapse.24¶ The trouble for conservation is that the data simply do not support the idea of a fragile nature at risk of collapse. Ecologists now know that the disappearance of one species does not necessarily lead to the extinction of any others, much less all others in the same ecosystem. In many circumstances, the demise of formerly abundant species can be inconsequential to ecosystem function. The American chestnut, once a dominant tree in eastern North America, has been extinguished by a foreign disease, yet the forest ecosystem is surprisingly unaffected. The passenger pigeon, once so abundant that its flocks darkened the sky, went extinct, along with countless other species from the Steller's sea cow to the dodo, with no catastrophic or even measurable effects.¶ These stories of resilience are not isolated examples -- a thorough review of the scientific literature identified 240 studies of ecosystems following major disturbances such as deforestation, mining, oil spills, and other types of pollution. The abundance of plant and animal species as well as other measures of ecosystem function recovered, at least partially, in 173 (72 percent) of these studies.25¶ While global forest cover is continuing to decline, it is rising in the Northern Hemisphere, where "nature" is returning to former agricultural lands.26 Something similar is likely to occur in the Southern Hemisphere, after poor countries achieve a similar level of economic development. A 2010 report concluded that rainforests that have grown back over abandoned agricultural land had 40 to 70 percent of the species of the original forests.27 Even Indonesian orangutans, which were widely thought to be able to survive only in pristine forests, have been found in surprising numbers in oil palm plantations and degraded lands.28¶ Nature is so resilient that it can recover rapidly from even the most powerful human disturbances. Around the Chernobyl nuclear facility, which melted down in 1986, wildlife is thriving, despite the high levels of radiation.29 In the Bikini Atoll, the site of multiple nuclear bomb tests, including the 1954 hydrogen bomb test that boiled the water in the area, the number of coral species has actually increased relative to before the explosions.30 More recently, the massive 2010 oil spill in the Gulf of Mexico was degraded and consumed by bacteria at a remarkably fast rate.31¶ Today, coyotes roam downtown Chicago, and peregrine falcons astonish San Franciscans as they sweep down skyscraper canyons to pick off pigeons for their next meal. As we destroy habitats, we create new ones: in the southwestern United States a rare and federally listed salamander species seems specialized to live in cattle tanks -- to date, it has been found in no other habitat.32 Books have been written about the collapse of cod in the Georges Bank, yet recent trawl data show the biomass of cod has recovered to precollapse levels.33 It's doubtful that books will be written about this cod recovery since it does not play well to an audience somehow addicted to stories of collapse and environmental apocalypse.¶ Even that classic symbol of fragility -- the polar bear, seemingly stranded on a melting ice block -- may have a good chance of surviving global warming if the changing environment continues to increase the populations and northern ranges of harbor seals and harp seals. Polar bears evolved from brown bears 200,000 years ago during a cooling period in Earth's history, developing a highly specialized carnivorous diet focused on seals. Thus, the fate of polar bears depends on two opposing trends -- the decline of sea ice and the potential increase of energy-rich prey. The history of life on Earth is of species evolving to take advantage of new environments only to be at risk when the environment changes again.¶ The wilderness ideal presupposes that there are parts of the world untouched by humankind, but today it is impossible to find a place on Earth that is unmarked by human activity. The truth is humans have been impacting their natural environment for centuries. The wilderness so beloved by conservationists -- places "untrammeled by man"34 -- never existed, at least not in the last thousand years, and arguably even longer.

**Loss is inevitable**

**Torres 16**

Phil Torres is the founder of the X-Risks Institute, an affiliate scholar at the Institute for Ethics and Emerging Technologies, Bulletin of the Atomic Scientists, April 11, 2016, “Biodiversity loss: An existential risk comparable to climate change”, http://thebulletin.org/biodiversity-loss-existential-risk-comparable-climate-change9329

But there is another existential threat that the Bulletin overlooked in its Doomsday Clock announcement: biodiversity loss. This phenomenon is often identified as one of the many consequences of climate change, and this is of course correct. But biodiversity loss is also a contributing factor behind climate change. For example, **deforestation in the Amazon rainforest and elsewhere** reduces the amount of carbon dioxide removed from the atmosphere by plants, a natural process that mitigates the effects of climate change. So the causal relation between climate change and biodiversity loss is bidirectional.

Furthermore, **there are myriad phenomena** that are **driving biodiversity loss** in addition to climate change. **Other causes include** **ecosystem fragmentation**, **invasive species**, **pollution**, **oxygen depletion caused by fertilizers** running off into ponds and streams, **overfishing**, **human overpopulation**, **and overconsumption**. All of these phenomena have a direct impact on the health of the biosphere, **and** all **would** conceivably **persist even if** the problem of **climate change were** somehow **immediately solved**.

Such considerations warrant decoupling biodiversity loss from climate change, because the former has been consistently subsumed by the latter as a mere effect. Biodiversity loss is a distinct environmental crisis with its **own unique syndrome of causes, consequences, and solutions**—such as restoring habitats, creating protected areas (“biodiversity parks”), and practicing sustainable agriculture.

**Biodiversity is resilient and inevitable**

**Sagoff 8** (Mark, Senior Research Scholar @ Institute for Philosophy and Public Policy @ School of Public Policy @ U. Maryland, Environmental Values, “On the Economic Value of Ecosystem Services”, 17:2, 239-257, EBSCO)

What about the economic value of biodiversity? Biodiversity represents nature's greatest largess or excess since species appear nearly as numerous as the stars the Drifters admired, except that "scientists have a better understanding of how many stars there are in the galaxy than how many species there arc on Earth."70 Worldwide the variety of biodiversity is **effectively infinite**; the myriad species of plants and animals, not to mention microbes that arc probably more important, apparently exceed our ability to count or identify them. The "next" or "incremental" thousand species taken at random would not fetch a market price because another thousand are immediately available, and another thousand after that. No one has suggested an economic application, moreover, for any of the thousand species listed as threatened in the United States.77 To defend these species - or the next thousand or the thousand after that - on economic grounds is to trade convincing spiritual, aesthetic, and ethical arguments for bogus, pretextual, and disingenuous economic ones.78 As David Ehrenfeld has written,

We do not know how many [plant] species are needed to keep the planet green and healthy, but it seems very unlikely to be anywhere near the more than quarter of a million we have now. Even a mighty dominant like the American chestnut, extending over half a continent, all but disappeared without bring¬ing the eastern deciduous forest down with it. And if we turn to the invertebrates, the source of nearly all biological diversity, what biologist is willing to find a value - conventional or ecological - for all 600,000-plus species of beetles?7\*

The disappearance in the wild even of agriculturally useful species appears to have **no effect** on production. The last wild aurochs, the progenitor of dairy and beef cattle, went extinct in Poland in 1742, yet no one believes the beef industry is threatened. The genetic material of crop species is contained in tens of thousands of landraces and cultivars in use - rice is an example - and does not depend on the persistence of wild ancestral types. Genetic engineering can introduce DNA from virtually **any species into virtually any other** - which allows for the **unlimited creation of biodiversity.**

A neighbor of mine has collected about 4,000 different species of insects on his two-acre property in Silver Spring, Maryland. These include 500 kinds of Lepidoptera (mostly moths) - half the number another entomologist found at his residence.80 When you factor in plants and animals, the amount of "backyard biodiversity" in suburbs is astounding and far greater than you can imagine.8' Biodiversity has **no value** "at the margin" because nature provides far more of it than anyone could possibly administer. If one kind of moth flies off, you can easily attract hundreds of others.

Alt cause:

#### 1. Acidification.

CBD, 10 (Center for Biological Diversity, Targeted News Service, “Legal Settlement Will Require EPA to Evaluate How to Regulate Ocean Acidification Under Clean Water Act”, 2010, L/N)

Ocean acidification, the "other carbon dioxide problem," results from the ocean's absorption of CO2 from the atmosphere, which increases the acidity of the ocean and changes the chemistry of seawater. The primary known consequence of ocean acidification is that it impairs the ability of marine animals to build and maintain the protective shells and skeletons they need to survive. Nearly every marine animal studied to date has experienced adverse effects due to acidification. "Ocean acidification is global warming's evil twin, and **CO2 pollution is one of the biggest threats to our marine environment**," said Sakashita. "We need prompt action to curb CO2 emissions to avoid the worst consequences of acidification."

#### 2. Overfishing.

NEWS Press ‘9(“End of the line at famed film festival”, 1-19, L/N)

Audiences at the famous Sundance film festival are being treated to the world premiere of a new movie highlighting the parlous state of the world's oceans. The End of the Line, a feature length documentary made with the support of WWF, has its first showing in the World Cinema Documentary competition today (Monday 19th Jan). The film - based on the book of the same name by UK environment journalist Charles Clover - calls for networks of marine protected areas, well-managed fishing and sustainable seafood as key solutions to restoring our oceans' health and bounty. Along with several other NGOs, WWF contributed to the film both financially and with expert advice. The End of the Line points the finger at over-fishing as one of the main reasons behind the current state of our marine environment. WWF International's Director of Marine Programme, Miguel Jorge, agrees. "**Overfishing is the single biggest immediate threat to our oceans**, and the film highlights some of the most conspicuous examples of excessive exploitation of marine resources, such as the decimation of bluefin tuna stocks in the Mediterranean." "It is important to note that there are many within the fishing and seafood sectors working hard to fish responsibly and supply consumers with healthy seafood that is good for the oceans and WWF is committed to working openly with these proactive, progressive players."

#### 3. Plastic pollution.

NYT, 8(Donovan Hohn, Contributing Ed. – Harpers, “Sea of Trash”, 6-22, L/N)

We still have limited tax dollars to spend and scarier nightmares to fear. No one -- not Pallister, not Moore -- will tell you that **plastic pollution is the greatest man-made threat our oceans face**. Depending whom you ask, that honor goes to global warming, agricultural runoff or overfishing. But unlike many pollutants, plastic has no natural source and therefore there is no doubt that we are to blame. Because we can see it, plastic is a powerful bellwether of our impact upon the earth. Where plastics travel, invisible pollutants -- pesticides and fertilizers from lawns and farms, petrochemicals from roads, sewage tainted with pharmaceuticals -- often follow. Last June, shortly before my voyage in the Opus began, Sylvia Earle, formerly N.O.A.A.'s chief scientist, delivered an impassioned speech on marine debris at the World Bank in Washington. ''Trash is clogging the arteries of the planet,'' Earle said. ''We're beginning to wake up to the fact that the planet is not infinitely resilient.'' For ages humanity saw in the ocean a sublime grandeur suggestive of eternity. No longer. Surveying the debris on remote beaches like Gore Point, we see that the ocean is more finite than we'd thought. Now it is the sublime grandeur of our civilization but also of our waste that inspires awe.

#### No impact to the environment

**Brook, Adelaide professor, 2013**

(Barry, “Worrying about global tipping points distracts from real planetary threats”, 3-4, <http://bravenewclimate.com/2013/03/04/ecological-tipping-points/>, ldg)

We argue that at the global-scale, ecological “tipping points” and threshold-like “planetary boundaries” are improbable. Instead, shifts in the Earth’s biosphere follow a gradual, smooth pattern. This means that it might be impossible to define scientifically specific, critical levels of biodiversity loss or land-use change. This has important consequences for both science and policy. Humans are causing changes in ecosystems across Earth to such a degree that there is now broad agreement that we live in an epoch of our own making: the Anthropocene. But the question of just how these changes will play out — and especially whether we might be approaching a planetary tipping point with abrupt, global-scale consequences — has remained unsettled. A tipping point occurs when an ecosystem attribute, such as species abundance or carbon sequestration, responds abruptly and possibly irreversibly to a human pressure, such as land-use or climate change. Many local- and regional-level ecosystems, such as lakes,forests and grasslands, behave this way. Recently however, there have been several efforts to define ecological tipping points at the global scale. At a local scale, there are definitely warning signs that an ecosystem is about to “tip”. For the terrestrial biosphere, tipping points might be expected if ecosystems across Earth respond in similar ways to human pressures and these pressures are uniform, or if there are strong connections between continents that allow for rapid diffusion of impacts across the planet. These criteria are, however, unlikely to be met in the real world. First, ecosystems on different continents are not strongly connected. Organisms are limited in their movement by oceans and mountain ranges, as well as by climatic factors, and while ecosystem change in one region can affect the global circulation of, for example, greenhouse gases, this signal is likely to be weak in comparison with inputs from fossil fuel combustion and deforestation. Second, the responses of ecosystems to human pressures like climate change or land-use change depend on local circumstances and will therefore differ between locations. From a planetary perspective, this diversity in ecosystem responses creates an essentially gradual pattern of change, without any identifiable tipping points. This puts into question attempts to define critical levels of land-use change or biodiversity loss scientifically. Why does this matter? Well, one concern we have is that an undue focus on planetary tipping points may distract from the vast ecological transformations that have already occurred. After all, as much as four-fifths of the biosphere is today characterised by ecosystems that locally, over the span of centuries and millennia, have undergone human-driven regime shifts of one or more kinds. Recognising this reality and seeking appropriate conservation efforts at local and regional levels might be a more fruitful way forward for ecology and global change science. Corey Bradshaw (see also notes published here on ConservationBytes.com) Let’s not get too distracted by the title of the this article – Does the terrestrial biosphere have planetary tipping points? – or the potential for a false controversy. It’s important to be clear that the planet is indeed ill, and it’s largely due to us. Species are going extinct faster than they would have otherwise. The planet’s climate system is being severely disrupted; so is the carbon cycle. Ecosystem services are on the decline. But – and it’s a big “but” – we have to be wary of claiming the end of the world as we know it, or people will shut down and continue blindly with their growth and consumption obsession. We as scientists also have to be extremely careful not to pull concepts and numbers out of thin air without empirical support. Specifically, I’m referring to the latest “craze” in environmental science writing – the idea of “planetary tipping points” and the related “planetary boundaries”. It’s really the stuff of Hollywood disaster blockbusters – the world suddenly shifts into a new “state” where some major aspect of how the world functions does an immediate about-face. Don’t get me wrong: there are plenty of localised examples of such tipping points, often characterised by something we call “hysteresis”. Brook defines hysterisis as: a situation where the current state of an ecosystem is dependent not only on its environment but also on its history, with the return path to the original state being very different from the original development that led to the altered state. Also, at some range of the driver, there can exist two or more alternative states and “tipping point” as: the critical point at which strong nonlinearities appear in the relationship between ecosystem attributes and drivers; once a tipping point threshold is crossed, the change to a new state is typically rapid and might be irreversible or exhibit hysteresis. Some of these examples include state shifts that have happened (or mostly likely will) to the cryosphere, ocean thermohaline circulation, atmospheric circulation, and marine ecosystems, and there are many other fine-scale examples of ecological systems shifting to new (apparently) stable states. However, claiming that we are approaching a major planetary boundary for our ecosystems (including human society), where we witness such transitions simultaneously across the globe, is simply not upheld by evidence. Regional tipping points are unlikely to translate into planet-wide state shifts. The main reason is that our ecosystems aren’t that connected at global scales.

### A2 Arctic Warming

#### Arctic ice is stable—alarmist predictions are wrong

Bastasch, 15 – senior reporter with The Daily Caller News Foundation, a D.C.-based news organization specializing in policy reporting and investigative journalism (Michael, 4/29. “‘Irreversible’ Arctic Ice Loss Seems To Be Reversing Itself.” http://dailycaller.com/2015/04/29/irreversible-arctic-ice-loss-seems-to-be-reversing-itself/#ixzz4LO47rQRG)

For years, scientists have been warning the Arctic was in a “death spiral” and could soon be ice-free during the summertime and shrink to unprecedented levels due to man-made global warming. Such ice loss could be “irreversible,” some scientists claimed.

But new research from the Scripps Institution of Oceanography says that predictions of a permanently ice-free Arctic are based on “oversimplified” theories. Scripps researchers, who were co-funded by the Navy, found that the Arctic sea ice may be “substantially more stable than has been suggested in previous idealized modeling studies.”

“We found that two key physical processes, which were often overlooked in previous process models, were actually essential for accurately describing whether sea ice loss is reversible,” Scripps climate scientist Ian Eisenman, co-author of a new study refuting claims the Arctic is in a “death spiral,” said in a statement.

“Our results show that the basis for a sea ice tipping point doesn’t hold up when these additional processes are considered,” echoed Till Wagner, also a Scripps scientist. “In other words, no tipping point is likely to devour what’s left of the Arctic summer sea ice. So if global warming does soon melt all the Arctic sea ice, at least we can expect to get it back if we somehow manage to cool the planet back down again.”

“If the associated parameters are set to values that correspond to the current climate, the ice retreat is reversible and there is no instability when the climate is warmed,” according to Eisenman and Wagner’s study.

Eisenman and Wagner’s study comes after the Arctic hit its lowest maximum sea ice extent on record during February. This was followed by the Arctic having its lowest ice extent for March on record, according to the National Snow and Ice Data Center. Indeed, Arctic sea ice has been declining at a rate of 2.6 percent per decade since 1979.

Scientists and climate pundits have already predicted this year’s Arctic summer sea ice extent will be the lowest on record, following poor winter extent. This has only bolstered claims that the Arctic could soon be ice free.

“Summertime Arctic sea ice is not long for this world,” lamented Joe Romm, a climate scientist and editor for the liberal blog ThinkProgress. “Because of Arctic amplification, the Arctic warms twice as fast (or more) than the Earth as a whole does.”

Romm goes on to cite a February study claiming that Arctic ice is losing its thickness and becoming more susceptible to warmer weather — meaning it’s melting a lot faster. The study, published in the journal The Cryosphere found that “annual mean ice thickness has decreased from 3.59 meters [11.8 feet] in 1975 to 1.25 m [4.1 feet] in 2012, a 65% reduction.”

“The ice is thinning dramatically,” climatologist Ron Lindsay, the study’s lead author, was quoted saying.

It wasn’t long ago that David Barber, Canada’s Research Chair in Arctic System Science at the University of Manitoba, warned there was almost no multi-year ice left in the Northern Hemisphere.

“We are almost out of multiyear sea ice in the northern hemisphere,” he told Canada’s Parliament in 2009. “I’ve never seen anything like this in my 30 years of working in the high Arctic … it was very dramatic.”

Arctic sea ice extent that year was at its third-lowest extent on record, behind 2007 and 2008, and experts were saying there would be no polar ice during the summer by 2030 for the first time in one million years.

“I would argue that, from a practical perspective, we almost have a seasonally ice-free Arctic now, because multiyear sea ice is the barrier to the use and development of the Arctic,” Barber said.

But such predictions have fallen flat, as the Arctic has seen a resurgence of multi-year ice since 2009.

NSIDC and European satellite data show that multi-year sea ice made a big comeback in 2013 and 2014 — increasing from 2.25 to 3.17 million square kilometers during that time and making up 43 percent of the north pole’s ice pack.

In fact, Arctic sea ice extent as a whole seems to be stabilizing despite this year’s record low maximum in February. NSIDC data shows Arctic sea ice extent is currently within the normal range based on the 1981 to 2010 average extent.

“Global sea ice is at a record high, another key indicator that something is working in the opposite direction of what was predicted,” Dr. Benny Peiser, director of the Global Warming Policy Forum, told the U.K. Express in January.

“Most people think the poles are melting… they’re not,” he said. “This is a huge inconvenience that reality is now catching up with climate alarmists, who were predicting that the poles would be melting fairly soon.”

#### Warming in the Arctic is self-correcting—increases snowfall which slows ice cap melting

Hsu, 16 – University at Buffalo (Charlotte, 5/24. “Paleo Study: Global Warming May Boost Arctic Snowfall And Slow Greenland Ice Sheet Decline.” http://www.reportingclimatescience.com/2016/05/24/arctic-snowfall/)

The history of Greenland’s snowfall is chronicled in an unlikely place: the remains of aquatic plants that died long ago, collecting at the bottom of lakes in horizontal layers that document the passing years.

Using this ancient record, scientists are attempting to reconstruct how Arctic precipitation fluctuated over the past several millennia, potentially influencing the size of the Greenland Ice Sheet as the Earth warmed and cooled.

An early study in this field finds that snowfall at one key location in western Greenland may have intensified from 6,000 to 4,000 years ago, a period when the planet’s Northern Hemisphere was warmer than it is today.

Global Warming Could Arctic Snowfall

While more research needs to be done to draw conclusions about ancient precipitation patterns across Greenland, the new results are consistent with the hypothesis that global warming could drive increasing Arctic snowfall — a trend that would slow the shrinkage of the Greenland Ice Sheet and, ultimately, affect the pace at which sea levels rise.

“As the Arctic gets warmer, there is a vigorous scientific debate about how stable the Greenland Ice Sheet will be. How quickly will it lose mass?” says lead researcher Elizabeth Thomas, PhD, an assistant professor of geology in the University at Buffalo College of Arts and Sciences who completed much of the study as a postdoctoral fellow at the University of Massachusetts Amherst.

“Climate models and observations suggest that as temperatures rise, snowfall over Greenland could increase as sea ice melts and larger areas of the ocean are exposed for evaporation. This would slow the decline of the ice sheet, because snow would add to its mass,” Thomas says. “Our findings are consistent with this hypothesis. We see evidence that the ratio of snow to rain was unusually high from 6,000 to 4,000 years ago, which is what you would expect to see if sea ice loss causes snowfall to increase in the region.”

#### BVOCs solve

Hays, 16 – freelance writer (Brooks, 4/3. “Plant gases could slow Arctic climate change.” http://www.upi.com/Science\_News/2016/04/05/Plant-gases-could-slow-Arctic-climate-change/1421459873299/)

Plants release an array of gases called biogenic volatile organic compounds, or BVOCs, which work to attract beneficial insects and pollinators, while repelling pests.

New research shows BVOCs are extremely sensitive to climate change and may help slow warming in the Arctic.

When researchers from the University of Copenhagen exposed plants in the Arctic tundra to warmer temperatures, they found a dramatic increase in the release of BVOCs.

"It seems that 3 to 4 times more biogenic volatiles are released from the tundra upon a two degree temperature rise, when the sun has a free rein," Riikka Rinnan, project leader and associate professor of biology, said in a news release.

Higher concentrations of BVOCs could promote cloud cover, researchers say, which could help keep the atmosphere cooler.

"Cloud formation depends on the presence of particles, on which water condenses, and an increased release of volatile compounds from the tundra leads to the formation of more particles in the atmosphere and perhaps clouds," Rinnan explained. "This can have a large impact on the arctic climate."

## ! Turns

### Ice Age

#### Warming Key to stop an Ice age

Alex **Morales**, 1-13-**2016**, "The Good News on Global Warming: We've Delayed the Next Ice Age," Bloomberg, http://www.bloomberg.com/news/articles/2016-01-13/the-good-news-on-global-warming-we-ve-delayed-the-next-ice-age

Global warming caused by fossil fuel emissions is blamed by scientists for intensifying storms, raising sea levels and prolonging droughts. Now there’s growing evidence of a positive effect: we may have delayed the next ice age by 100,000 years or more. QUICKTAKE Climate Change The conditions necessary for the onset of a new ice age were narrowly missed at the beginning of the Industrial Revolution in the 1800s, researchers at the Potsdam Institute for Climate Impact Research near Berlin wrote Wednesday in the journal Nature. Since then, rising emissions of heat-trapping CO2 from burning oil, coal and gas have made the spread of the world’s ice sheets even less likely, they said. “This study further confirms what we’ve suspected for some time, that the carbon dioxide humans have added to the atmosphere will alter the climate of the planet for tens to hundreds of thousands of years, and has canceled the next ice age,” said Andrew Watson, a professor of Earth sciences at the University of Exeter in southwest England who wasn’t involved in the research. "Humans now effectively control the climate of the planet." The study reveals new findings on the relationship between insolation, a measure of the Sun’s energy reaching the planet, levels of carbon dioxide in the atmosphere, and the spread of ice sheets that characterize an ice age. The researchers in Germany were able to use computer models to replicate the last eight glacial cycles and provide predictions on when the next might occur. The scientists found that even without further output of heat-trapping gases, the next ice age probably wouldn’t set in for another 50,000 years. That would make the current so-called inter-glacial period “unusually long,” according to the lead author, Andrey Ganopolski. “However, our study also shows that relatively moderate additional anthropogenic CO2-emissions from burning oil, coal and gas are already **sufficient to postpone the next ice age** for another 50,000 years,” which would mean the next one probably won’t start for 100,000 years, he said. “The bottom line is that we are basically skipping a whole glacial cycle, which is unprecedented.

#### Extinction

David **Deming 2009** (geophysicist and associate professor of Arts and Sciences at the University of Oklahoma) The Coming Ice Age, 5/13/09, http://www.americanthinker.com/2009/05/the\_coming\_ice\_age.html

In northern Europe, the Little Ice Age kicked off with the Great Famine of 1315. Crops failed due to cold temperatures and incessant rain. Desperate and starving, parents ate their children, and people dug up corpses from graves for food. In jails, inmates instantly set upon new prisoners and ate them alive. The Great Famine was followed by the Black Death, the greatest disaster ever to hit the human race. One-third of the human race died; terror and anarchy prevailed. Human civilization as we know it is only possible in a warm interglacial climate. Short of a catastrophic asteroid impact**, the greatest threat to the human race is the onset of another ice age**. The oscillation between ice ages and interglacial periods is the dominant feature of Earth's climate for the last million years. But the computer models that predict significant global warming from carbon dioxide cannot reproduce these temperature changes. This failure to reproduce the most significant aspect of terrestrial climate reveals an incomplete understanding of the climate system, if not a nearly complete ignorance. Global warming predictions by meteorologists are based on speculative, untested, and poorly constrained computer models. But our knowledge of ice ages is based on a wide variety of reliable data, including cores from the Greenland and Antarctic ice sheets. In this case, it would be perspicacious to listen to the geologists, not the meteorologists. By reducing our production of carbon dioxide, we risk hastening the advent of the next ice age. Even more foolhardy and dangerous is the Obama administration's announcement that they may try to cool the planet through geoengineering. Such a move in the middle of a cooling trend could provoke the irreversible onset of an ice age. **It is not hyperbole to state that such a climatic change would mean the end of human civilization as we know it.** Earth's climate is controlled by the Sun. In comparison, every other factor is trivial. The coldest part of the Little Ice Age during the latter half of the seventeenth century was marked by the nearly complete absence of sunspots. And the Sun now appears to be entering a new period of quiescence. August of 2008 was the first month since the year 1913 that no sunspots were observed. As I write, the sun remains quiet. We are in a cooling trend. The areal extent of global sea ice is above the twenty-year mean. We have heard much of the dangers of global warming due to carbon dioxide. But the potential danger of any potential anthropogenic warming is trivial compared to the risk of entering a new ice age. Public policy decisions should be based on a realistic appraisal

### Food crisis

#### CO2 promotes the greening effect – leads to fewer deaths from starvation

**Bell 16** (Cfact, “Co2 ‘pollution’ is greening the planet,” Larry Bell, 5/9/16, <http://www.cfact.org/2016/05/09/co2-pollution-is-greening-the-planet/)> // SR

If there’s anything that climate crisis theology clerics hate more than fossil fuels, it’s got to be any glad tidings about CO2. Like, for example, results of a global satellite study published last month in the journal Nature. It reported that thanks to that “pollutant,” the planet is producing lots more veggies even the most strident non-carnivorous ideologically superior planetary salvationists should truly celebrate. How much more? Well according to the 32 researchers from nine countries, **it amounted to “a persistent and widespread increase” of greening over 25% to 50% of the “global vegetated area”** over the past 35 years. Less than 4% of the globe showed a reduction. Of the 85% of Earth’s ice-free lands, the areas covered in green average about 32% of that amount. The additional leaves laid out in a carpet would cover the continental U.S. twice over. If you have been holding your breath wondering why this is occurring, go ahead relax . . . take some blameless credit. Based upon simulated ecosystem models, the researchers credited 70% of this green bounty to CO2 fertilization benefits. They Lush-Green-Forestattributed another 9% to nitrogen fertilizers and 4% to shifts in land management, neither of which explain observed added forest growth. A 2013 study of temperate and boreal forests in the Northern Hemisphere (also published in the journal Nature), reported a substantial increase in water-use efficiency over the past two decades that was much larger than predicted by biosphere models. This was attributed to increased ecosystem-level photosynthesis, net carbon uptake, and decreasing evapotranspiration (water loss). And here’s the part some authors of the most recent report obviously had to struggle with. **They attributed the third greatest beneficial influence — 8% — to “climate change**”. This admission must have been particularly painful for co-author Philippe Ciais from the Laboratory of Climate and Environmental Sciences in France, who has also served as an author for reliably alarmist UN Intergovernmental Panel on Climate Change (IPCC) reports. True to form, Ciais said: “The fallacy of the contrarian argument is two-fold. First, the many negative aspects of climate change are not acknowledged. “Second, studies have shown that plants acclimatize to rising CO2 concentration and the fertilization effect diminishes over time.” Well actually, no. He’s wrong on both accounts. Regarding the first “fallacy,” as Judith Curry, former chair of Earth and Atmospheric Sciences at the Georgia Institute of Technology, has pointed out, “It is inappropriate to dismiss the arguments of the so-called contrarians, since their disagreement with the consensus reflects conflicts of values and preference for the empirical [i.e., what has been observed] versus the hypothetical [i.e. what is projected from climate models].” As for claims that CO2 fertilization benefits are temporary, leading CO2 plant growth authority Craig Idso, who chairs the Center for the Study of Carbon Dioxide and Global Change, finds no empirical evidence exists to support a model-based claim that future carbon uptake by plants will diminish due to rising temperatures. In fact, just the opposite has been observed in the real world. Over the past 50 years, global carbon uptake has doubled. CO2 boosts water use efficiency. Increased CO2 fertilization enables plant leaves to extract more carbon from the air — lose less water — or both — during photosynthesis, a process that converts sunlight and soil nutrients into sugars which fuel life. Many plants also tolerate heat better when CO2 levels are higher, a condition evidenced by satellite imagery of deserts and savannas where greenery expansion is more apparent than in wet locations. Lead author Zaichun Zhu from Peking University told BBC News, “The greening reported in this study has the ability to fundamentally change the cycling of water and carbon in the climate system.” In many regions of the world a warmer planet will lead to more precipitation and longer growing seasons. **This results in far fewer deaths from starvation and winter hypothermia**. And yes, although just not happening very recently, climate change is very real. Despite “record high” atmospheric CO2 levels, other than 1998 and 2015 ocean El Nîno temperature spikes, satellites have recorded no statistically significant global warming over nearly the past two decades. Nevertheless, this “pause” is occurring within a nearly two-century-long natural warming trend which began before the Industrial Revolution introduced fossil-fueled smokestacks and SUVs. Those same fossil fuels displaced the use of firewood, preserving more forests to exchange CO2 for oxygen we and Bambi depend upon while also returning plant fertilizer to grow more food in the bargain.

#### The best experiments prove rising CO2 is needed for large increases in food yields.

**Taub 13** (Daniel Taub, Professor of Environmental Studies at Southwestern University, and Xianzhong Wang, Professor of Biology at Indiana University-Perdue University Indianapolis. Effects of carbon dioxide enrichment on plants. In Pielke, R. Editor-in-Chief, Climate Vulnerability. 2013. Academic Press: San Diego, ISBN 978012384703)

Concentrations of carbon dioxide in Earth’s atmosphere have been steadily increasing, from an average of approximately 280 ppm (parts per million) prior to the Industrial Revolution (Gerhart and Ward 2010), to approximately 315 ppm in 1959, to a current (2012) average of approximately 392 ppm (Conways and Tans 2012) Projections of concentrations for the year 2100 vary widely, but are mostly in the range of 500-1000 ppm (Solomon et al 2007). These increases in atmospheric CO2 concentrations have received a great deal of attention as a potential influence on climate. However, increasing atmospheric concentrations of CO; also directly affect biogeochemical processes that directly involve the carbon dioxide molecule including (1) effects on organisms that uptake CO2 in photosynthesis, (2) decreasing ocean pH due to increased dissolution of CO2 to form carbonic acid, (3) alterations in oceanic carbonate chemistry, with impacts on marine organisms with calciﬁed body parts. ln this review we will focus on direct CO2 effects on terrestrial plants. We refer readers to Denman et al. (2011), Pabty et al. (2008), and Guniotte and Fabry (2008) for reviews of the effects of rising atmospheric CO2 on ocean chemistry and marine organisms. In this review, we ﬁrst discuss the experimental method- ology that has been used to discover the effects of growth under elevated concentrations of CO2 on plants and plant communities. We then consider the various ways that **increased atmospheric concentrations of CO2 can affect plant growth**, chemistry, and **physiological functioning**, and examine the impact of CO2 enrichment on plant community structure and function. Finally, we examine ways that the effects of elevated CO2 on plants may negatively impact the ecosystem services that plants provide. Throughout, it should be noted that we are concerned with the direct effects of increasing atmospheric CO2 on plants rather than the effects that may occur indirectly through the influence of rising atmospheric CO2 on other aspects of the climate system. 4.04.1.2 Experimental Methodology of Elevated C02 Research **Our knowledge of the effects on plants of increased concentrations of atmospheric CO2 comes from experiments in which plants have been artiﬁcially exposed to the CO2 concentrations** anticipated to occur over the next century (aka elevated CO2 conditions). A wide range of facilities have been used to fumigate plants with elevated CO2 in this manner. These facilities can be divided into three broad categories. 1. Closed facilities. These facilities include growth chambers, CO2 controlled greenhouses, and other indoor facilities. Closed facilities have been used widely, and were the earliest technology used for CO2 enrichment studies. One major advantage of these facilities is the ability to precisely control environmental conditions, including CO2 concentration, temperature, light intensity, photo- period, and relative humidity. Another advantage is a relatively low cost of operation. The chief drawback of these facilities is a lack of realism: plants are typically rooted in soil in pots that restrict root growth and environmental conditions inside these facilities can be quite different from field conditions. 2. Semi-open systems. This category is best represented by open-top chambers (OTC). These can be placed in natural and agriculture field settings. Plants in these experiments are often rooted naturally in the soil, and because the chambers have open tops, the environment is much closer to field conditions than inside enclosed facilities. However, plants grown in OTCs usually experience warmer, more humid conditions and lower light intensity than those grown outside. 3 3. Free-air CO2 enrichment (FACE). In FACE facilities, gas emitters are used to fumigate vegetation with gases such as CO2 and ozone without enclosing chambers of any kind. FACE can therefore simulate changes in atmospheric composition **under realistic ﬁeld conditions**. Because FACE rings are typically larger in size (up to 15-25 m diameter) than either enclosed facilities or OTCs, FACE facilities can also incorporate a large number of plants, and can be used to study ecosystem interactions that occur over somewhat larger spatial scales than for other methods of CO 2 enrichment The shortcomings of FACE include a high cost of setup and maintenance, and problems maintaining steady CO2 levels under windy conditions. All things considered, FACE offers the most realistic simulation of the real-world environmental conditions of the future. The ﬁrst generation of FACE experiments have largely been completed, and researchers have recently been considering ambitious plans for new types of FACE experiments that could operate at even larger scales and with enhanced realism (Ainsworth et al. 2008; Calfapierta et al. 2009). Ln this article, we incorporate results from all types of CO2 enrichment facilities, **focusing on results from FACE experiments** when available. Throughout, we identify the type of research facility from which particular results have been obtained, so the data can be interpreted in the proper context. If we do not specify a particular type of facility, we (or the previous authors we cite) are discussing results drawn from all types of facilities. 4.04.2 Effects of Elevated CO2 on Plants 4.04.2.1 Physiological Effects Plants assimilate carbon dioxide through the process of photosynthesis, chemically reducing the carbon to form organic molecules. These organic molecules make up more than 95% of the dry mass of a typical plant and provide energy for the plant’s metabolism. Because CO2 plays this pivotal role in plant metabolism, rising atmospheric CO2 concentrations can be expected to alter a great many aspects of plant physiology and chemistry. 4.04.2.1.1 Photosynthesis and Growth Plants grown under elevated CO2 conditions typically experience increased rates of photosynthetic carbon fixation. Reviewing FACE studies performed on a broad range of plant species, Ainsworth and Rogers (2007) **found an average increase in photosynthetic rates under elevated CO2** (475-600 ppm) **of 40%**. The increased availability of reduced carbon compounds such as carbohydrates provided by this increased photosynthesis **increases the growth rate for most plants**. In FACE experiments, elevated CO2 increased dry matter production of above-ground tissues by an average of 17% and production of below ground tissues by more than 30% (Ainsworth and Long 2005; de Graaf et al. 2006). Norby and Zak (2011) found an average of stimulation of net primary productivity (roughly defined as the amount of organic biomass entering an ecosystem through the photosynthetic organisms living there) of 23% in FACE experiments in forest ecosystems. Crop yields are also increased under elevated CO2. **Yields of wheat, rice, barley, and soybean increase by an average of 12-17% in FACE experiments** (Ainsworth 2008; Ainsworth and McGrath 2010; Long et al 2006). Yields of potato tubers increase **even more**, by ~30% on average (Ainsworth and McGrath 2010; Kimball 2010).

#### We are on the brink of food crisis which causes World War III

**Heneghan 15** (Carolyn Heneghan, staff writer at FoodDive who cites the following: Hiroyuki Konuma, Assistant General of the UN Food and Agriculture Organization; the Global Harvest Initiative; Scott Ickes, a Professor of Public Health and Nutrition at the College of William & Mary. “Where food crises and global conflict could collide” January 22, 2015 <http://www.fooddive.com/news/where-food-crises-and-global-conflict-could-collide/350837/>)

**World War III** is unimaginable for many, but some experts believe that not only is this degree of global conflict imminent, but it **may be instigated** not by military tensions, oil and gas, or nuclear threats, but instead **by**, of all things, food. As it stands, **countries** across the globe are **enduring food crises**, and the U.N.’s Food & Agriculture Organization (FAO) estimates that about 840 million people in the world are undernourished, including the one in four children under the age of 5 who is stunted because of malnutrition. Assistant director-general of U.N. FAO Asia-Pacific Hiroyuki Konuma told Reuters that social and **political unrest, civil wars, and terrorism could all be possible results of food crises**, and “world security as a whole might be affected.” Such consequences could happen **unless the world increases its output of food production** 60% by mid-century. This includes maintaining a stable growth rate at about 1% to have an even theoretical opportunity to circumvent severe shortages. These needs are **due to** the **growing** global **population**, which is expected to reach 9 billion by 2050 while demand for food will rise rapidly. Where the problems lie Exacerbating this issue is the fact that the world is spending less on agricultural research, to the dismay of scientists who believe global food production may not sustain the increased demand. According to American Boondoggle, “The pace of investment growth has slowed from 3.63 percent per year (after inflation) during 1950–69, to 1.79 percent during 1970–89, to 0.94 percent during 1990– 2009.” Decreased growth in agricultural research and development spending has slowed across the world as a whole, but it is even slower in high-income countries. Water scarcity is another problem, including in major food-producing nations like China, as well as climate change. Extreme weather events are having a severe effect on crops, which have been devastated in countries like Australia, Canada, China, Russia, and the U.S., namely due to floods and droughts. An Intergovernmental Panel on Climate change recently warned that climate change may result in “a 2% drop each decade of this century,” according to RT. Rising food costs also contribute to poor food security across the world as prices remain high and volatile. Higher food costs inhibit lower socioeconomic people’s access to food, which contributes to the FAO’s disturbing figure of global malnutrition. In addition to an inability for people to feed themselves, poverty can also reduce food production, such as some African farmers being unable to afford irrigation and fertilizers to provide their regions with food. Still another issue for decreased food production is the fact that many farmers are turning crops like soy, corn, and sugar into sources for biofuel rather than edible consumption, which means these foods are taken away from people to eat. Could these shortages lead to a major global conflict? Studies suggest that **the food crisis could begin as early as 2030**, just a short 15 years from now, particularly in areas such as East Asia and Sub-Saharan Africa. Both regions have significant problems with domestic food production. Some experts believe that, to secure enough food resources for their populations, **countries may go to war over the increasingly scarce food supply**. This could be due in part to warring parties blocking aid and commercial food deliveries to areas supporting their enemies, despite the fact that such a practice breaks international humanitarian law. Conflict also leads to lack of food supply for populations as people become displaced and forced from their homes, jobs, and income and thus cannot buy food to feed themselves. Displaced farmers are also unable to produce their normal crops, contributing still more to food shortages in certain countries. **Food insecurity is a major threat to world peace** and could potentially incite violent conflict between countries across the world. Thus, the U.N. and other governmental bodies are desperately trying to find ways to solve the problem before it becomes something they cannot control.

### Quebec Secession

#### Covid strengthening Quebec nationalism - we’re on the brink now

Girard 20. Louis Girard, 7-31-2020, "Quebec Solidaire joins with the hard-right in promoting economic nationalism", International Committee of the Fourth International, https://www.wsws.org/en/articles/2020/07/31/qsca-j31.html //SW

The World Socialist Web Site recently exposed how Quebec Solidaire (QS)—a pseudo-left party that holds ten seats in the 125-member Quebec National Assembly—has supported Canadian authorities’ disastrous handling of the COVID-19 pandemic, and facilitated their efforts to compel a premature return to work that puts corporate profits before human lives. (See: Quebec Solidaire backs Canadian elite’s disastrous handling of COVID-19 pandemic)  The coronavirus crisis has also provided QS with an opportunity to join forces with the province’s right-wing populist, “Quebec First” CAQ (Coalition Avenir Québec) government in promoting a reactionary economic nationalist agenda.  Quebec Solidaire enthusiastically applauded the CAQ government's “Blue basket” initiative, a website promoting “Quebec made” products. The “Blue basket” is based on the principle, spelled out by Quebec Premier Francois Legault, that “we should be self-sufficient for goods that are essential.” QS, for its part, calls on the CAQ government “to set an example by investing in our local businesses,” and advocates that it “replace 40 percent” of the purchases Quebec departments and agencies make from out-of-province firms “with local purchases within four years.”  Quebec Solidaire has also responded positively to the CAQ’s proposal that Quebec become self-sufficient in medical equipment. QS advocates Quebec take “control of our medical supply” and create a new Quebec government agency, Pharma-Québec. This it claims would allow for a coronavirus vaccine to “be produced here in Quebec as soon as it is ready, with the sole objective of making it quickly accessible to the Quebec population.”  At a time when the COVID-19 pandemic is threatening millions of lives around the world, demonstrating the need for a science-based, internationally-coordinated response, Quebec Solidaire is trumpeting its nationalist egoism and parochialism.  Its reactionary utopia of “buying locally” and “developing a Quebec vaccine” exclusively for Quebeckers is part of pronounced shift by ruling elites in Canada, the United States and the world over towards national protectionism, intensified strategic competition, and virulent chauvinism.  This includes all sections of the political establishment—from Trump and the ultra-right to pseudo-left parties such as Quebec Solidaire and the German Left Party, as well as the traditional parties of government, liberal, conservative, and social-democratic.  These forces are exploiting the health and socio-economic catastrophe triggered by the COVID-19 pandemic to promote protectionism, including local production of “strategic resources,” and the strengthening of the state—based on the spurious claim that dependence on the import of N95 masks and other medical supplies has been a major factor in the pandemic’s deadly impact.

#### Economic causes Quebec secession – causes great power war AND global secessionism.

Daniel **Matthews 14**. Naval Gunfire Liaison Officer for III MEF. 2014. “THE QUEBEC WARS”<http://cimsec.org/quebec-wars/11757> http://cimsec.org/quebec-wars/11757

Thought of Canada being the region where the **sparks for World War III will be struck** may not seem likely, but there is one area where a foreign **foe could surprise the West: Quebec**. If Quebec were to secede from Canada, two unsettling possibilities could occur. The first is that **Canada could go to war with its wayward province**. The second is that **some power like China or Russia could build an alliance with Quebec**. While such possibilities are unlikely, there are means of defense. The Canadian Civil War If Quebec were to secede from Canada, there are several points that could **spark a civil war between the two**. The least likely would be national pride. There are several **economic reasons that could provide the tinder for war.** Quebec controls the mouth of the St. Lawrence River, and Quebec could use that control to wage economic war with Western Canada. In addition, Quebec possesses significant reserves of natural resources that currently contribute to the North American economy on a free basis. An independent Quebec would change that. Finally, Canada proper would become a split country, with a third of Canadian provinces being geographically separated from the Capital. In light of the fact that no state wants to be divided, and Canada already has several fluttering independence movements, the urge to prevent further dissolution will be strong. While it is true that Canada does not have a large military, and Quebec has none, it is not impossible for war to break out. The Quebec separatists have used violence before, most notably with the murder of Quebec Labour Minister Pierre Laporte, and it would be easy for a semi-independent Quebec to buy arms on the international market. If Canada did get involved in civil war with Quebec, there are several options open to both sides if the war drags on. Canada could invoke Article 5 of the NATO treaty, which could split NATO as France has traditionally expressed support for Francophone Quebec. It is unlikely Britain would be unconcerned with a core Commonwealth state being embroiled in civil war; especially depending on how the vote for Scottish independence goes this year. The United States would be committed, as they are deeply intertwined with Canada at every level. States like Russia, China, or Iran could use the **distraction** of a civil war in the very center of the Anglosphere to **press their boundaries with the Western Alliance**. Furthermore, they could start supporting the Quebec rebels, either directly or through third party means. If the war was presaged by an internationally recognized referendum, then Russia or China could take the position that they are upholding international norms, and paint the Western states in a negative light. Attempts at arming the rebels or openly supporting them would directly **threaten the fundamental security of the United States,** as it would **provide a foothold on the continent from which hostile states could threaten the United States**. The Bear and the Dragon in Quebec While the first scenario of a successful Quebec independence movement immediately descending into world war is unlikely, the far more dangerous one of an independent Quebec making allies with states hostile to the West is possible. An independent Quebec would have the full ability to make alliances with foreign powers, and it is unlikely they would be readily welcomed into NATO, NAFTA, or other treaties with the Western powers. Canada would put pressure on any attempts to allow Quebec a seat at the table, and European countries would be wary of admitting Quebec, **as it could fuel separatist movements within their own countries.**   In addition, the United States would not want the possibility of Canada dissolving, even if most of the providences would likely join the United States. This method of amalgamation would be undesirable, if for no other reason than there is no guarantee that each section of Canada would join the US, and a unified Canada is better for the US than a series of states on its northern border. The dissolution of Canada could also embolden separatist movements in the United States.   Given the internal danger to Western countries an independent Quebec would present, it is likely that Quebec would be forced to look for friends elsewhere. Russia and China are the most likely candidates. Both countries would be interested in the natural resources of Quebec. China and Russia would also both enjoy the prospects of helping to develop Quebec’s Arctic resources. In addition, the possibility of a military alliance with Quebec would present an opportunity not present since Alaska became part of the United States**; a land connection to the United States.**   Right now the Anglosphere is protected by its island status, with no major hostile powers sharing a land border with any member. An independent Quebec would be courted by hostile powers to allow such a chance thought. Russia would view it as retaliation for NATO expanding into the Baltics, Poland, and developing close relations with Ukraine and Georgia. China would view it as a chance to have a mirror for the US alliances in China’s First Island Chain, with the added bonus of a large land connection to the American heartland, as opposed to the slender one that the US has against China on the Korean peninsula. The presence of a near-peer competitor with **bases on** the **North America**n heartland would greatly reduce the flexibility of Western countries as they exert their influence on the world. Such a situation would be more bothersome to the United States and its allies than the Zimmerman telegram of a century ago, or the presence of Soviet missiles in Cuba half a century ago. It would have the same effect as **Germany’s race to rival Britain** on the high seas **before World War I**.

#### Climate change solves - it makes Canada a global superpower.

**Dembicki 17** [Geoff, VICE journalist, “How Climate Change Could Turn Canada into a Global Superpower,” accessible online at<https://www.vice.com/en_ca/article/mbanm4/how-climate-change-could-turn-canada-into-a-global-superpower>, published 07/24/17] // BBM

Climate change is going to suck for every country on the planet. But it may suck slightly **less** for Canada. If humanity can't reduce its greenhouse gas emissions to effectively **zero** by the end of this century, the doomsday impacts are difficult to fathom. The mass extinctions, crushing heat waves, exotic diseases, clouds of death smog and poisoned oceans described in a viral New York Magazine story by David Wallace-Wells would make our natural world unrecognizable. Yet climate change may also significantly affect the geopolitical world. By 2100, it's conceivable that the US economy will nosedive, dozens of developing countries will collapse and a new global superpower will arise to fill the **power vacuum**: **Canada**. No, seriously. Canada's economic dominance could be built on its gigantic supplies of **freshwater**, an ice-free Arctic Ocean that revolutionizes **international trade** and a mild-to-moderate climate that will be the **envy** of scorched and unlivable countries in more southern latitudes. But here's the thing: life won't be all that pleasant for many Canadians. We will be under constant threat of flooding, wildfires, tornadoes, heat waves, infestations and other disasters. National economic gains will mask stark and growing inequalities. Waves of immigrants and refugees will make us intolerant of outsiders. Amidst the chaos we will turn to authoritarian strongmen like Donald Trump to lead us. Yet compared to the rest of the world, Canada could look like a **progressive utopia**. To help us understand how this scenario may come to pass, VICE reached out to experts who study the future from the biggest of perspectives. They stressed the scenario above is one of many that could occur in a century of abrupt and nonlinear change. But the longer we delay on climate action, the **likelier** it becomes. One of those experts is Stanford University's Marshall Burke, who is among the world's top researchers on climate and economic productivity. He also studies the impact of global warming on armed conflict. Burke and several of his colleagues published a paper in the prestigious scientific journal Nature postulating that if climate change continues unabated there could be a 23 percent decline in average global income by 2100—compared to a world where global warming doesn't exist. Canada's average national income, meanwhile, could increase by **247 percent**. Burke's team produced these astounding figures by studying the past. "We're using history as a laboratory," he said. They looked at the impact of temperature changes on 50 years of economic activity in 166 countries. They examined whether the GDP in places as diverse as the US, Brazil, and Cameroon went up or down in years with unusually warm or cold weather. They found that economies tend to perform best in areas with average annual temperatures of 13 degrees Celsius—which, as it turns out, pretty much exactly describes a place like Silicon Valley. "Coincidence or not these also tend to be some of the wealthiest locations in the world," Burke said. His team then extrapolated those findings into the future. They imagined a world where climate change proceeds unabated until the year 2100. Already-hot countries suffer drastic impacts. Moderately warm ones decline. And cold nations like Canada see potentially large **economic gains** as their average annual climates approach the 13 degrees "**sweet spot**." These shifts won't be immediately visible to most people. "In any given year it's going to be hard to detect the specific contribution of climate to economic performance," Burke noted. "But what you're likely to see is sort of a death by thousand cuts." No country—rich or poor—will be immune from them. The most obvious way climate change affects an economy is through **agriculture**. Drought, storms, heat waves and invasive pests make it harder to grow food. Yet in an advanced economy such as the US, climate change could hamper growth in less apparent ways. Sweltering temperatures cause death and hospitalization, resulting in a **financial drag** on the healthcare system. Natural disasters hurt the insurance industry. People are **less effective** at their jobs in extreme heat. Factories produce fewer goods. The aggregate impact, according to Burke's research, could be a 36 percent decline in US income by 2100. The South will be hit particularly hard. And these are the impacts we could expect in one of the world's richest and most powerful countries. Places that are already struggling economically are going to be absolutely pummeled. Dehydration and chronic kidney disease could ravage Latin America's farm workers. Drought may set off civil wars in Africa. Entire cities and regions of the Middle East might become too physically hot to survive in. National income declines of 80 to 90 percent would become common across the developing world—that is, compared to growth scenarios without climate change. And this isn't even accounting for the one-off disasters—say, for instance, a surge of superstorms that destroy New York and London—which could send the global economy into a tailspin. "Our estimates can be considered a bit conservative," Burke said. Canadians will be watching the world burn with a mixture of **relief** and anxiety. In no way are we going to be immune from the physical effects of climate change. Polar bears and seals will go extinct across the North. Towns built on melting permafrost might literally collapse. Wildfires will rage out of control. Natural disasters caused by climate change could cost Canada up to $43 billion per year by mid-century, TD Economics estimated in 2014. Yet each dollar spent right now on adaptation could prevent up to $38 in future damages. And northern countries like Canada could see **economic benefits** from warmer temperatures. "Canada is going to have multiple **geographic advantages**," Burke said. "The evidence would suggest that Canada is likely to do well relative to many of its trading partners and competitors." One way that could happen is if melting ice opens up **shipping routes** in the Arctic Ocean. This would significantly **reduce** the **time** and **cost** of international trade. It could **revolutionize** the industry, the same way that container shipping did over the past 60 years, explained Rob Huebert, a University of Calgary associate professor who's studied the impact of climate change on the Arctic. "The ice will be gone and all of a sudden this becomes a passage and it becomes a passage through a country that will be considerably more stable than what you see in, say, Egypt," he said. Climate change could at the same time bring **more fish** into the Arctic Ocean, and into the northern reaches of the Pacific and Atlantic. During these same decades global trade is expected to **triple**, while the economic value of the planet's oceans doubles to **$3 trillion**. By taking advantage of these trends Canada could become a "**global superpower**," as Ocean Networks Canada leader Kate Moran has argued. That's an assessment shared by UCLA scientist Lawrence Smith, who's speculated that the small Manitoba city of Churchill could be one of 10 "**ports of the future**." "In many ways, the New North is **well positioned** for the coming century," he wrote. And Stony Brook professor Noah Smith has urged Americans to, "keep an eye on the big country to the north—it could be headed for very important, very good things."

#### Quebec-inspired secessionism causes extinction.

**Kimon Valaskakis 14**, Former Canadian Ambassador to the OECD, “Separatism Everywhere: The New Global Epidemic,”<http://www.huffingtonpost.com/kimon-valaskakis/separatism-everywhere-the_b_4977800.html>

Crimea wants to leave Ukraine. Scotland has scheduled an independence referendum from Britain in September 2014 and Britain is considering one to possibly leave Europe in 2015. Catalonia’s referendum to secede from Spain is in November 2014, and **Quebec** may possibly **organize** its own **in the next couple of years**. Wallonie, Corsica, North Italy, Bretagne etc. may one day **follow suit**. There is even talk of splitting California in two! Why are these centrifugal forces emerging now? There seems to be four leading reasons. The first is a knee jerk reaction against excessive and unregulated globalization which leaves the ordinary citizen lost and with no identity. He therefore seeks a new sense of belongingness in a small, newly independent country, favoring localism over globalism. The second is the fact that most so called ‘nation’ states are actually multinational and diverse. The ethnic minorities which feel oppressed in such states, are tempted to seek a divorce, set up their own nation, where they are will then be the majority — and perhaps, in the process, exact revenge on their former tormentors, now in the minority. The third is the worldwide failure of national governments, who seem to be chronically unable to deliver on their electoral promises. One response is to ‘throw the rascals out’, which explains why governments of the left, right and center are regularly kicked out of office at the next election. In the U.S., an irate electorate consistently punishes the governing parry at the mid-terms regardless of its ideology. An alternative response to ineffective governance is to seek independence, whenever there is a geographical concentration of like minded opponents to a central regime. This was what the U.S. Civil War was all about and is what many contemporary ethnic struggles are leading towards. Fourth and finally, there is simple self interest. **Rich provinces**, in a country, **who**se constitution **obliges them** to help poorer ones, (like **Canada**) may want to **end these subsidies and keep all the money** to themselves. Under this logic it should be Alberta rather than Quebec considering secession. When all is said and done, is all this good or bad news ? At first blush, by invoking the principle of self-determination, the virtues of decentralization and more responsible local government, we might be tempted to welcome these centrifugal forces. But upon reflection and careful analysis we should instead fear them because they will exacerbate the present mismanagement of our planet. The separatists often believe that they can repeal globalization by a simple declaration of sovereignty, the adoption of a new flag and national anthem and by being awarded a seat in the United Nations. This, unfortunately is a delusion. Globalization is fueled by international capital, labor and technology movements, the internet, global finance and powerful worldwide networks — some visible, others covert. Multinational corporations are going to remain global, and so are mafias, narco-cartels, organized crime, jihadists etc. If all the **separatist** movement**s** in the world were to succeed, we could move from a present world of under **200** countries to one of over **1,000** -- all with an equal seat at the UN. Can you imagine how difficult it would be to decide on anything in a 1,000 strong UN general assembly? Think, also, of the balance of power: 1,000 fragmented small countries, plus their subnational governments, competing for the favors of a dozen huge unregulated global conglomerates. It would be an embarrassment of riches for the footloose conglomerates. It would also be Eldorado for organized crime, jihadists, tax evaders and assorted criminals vaulting from jurisdiction to jurisdiction. The sociologist, Daniel Bell once remarked,in the 1970s, that the nation state had become too big for the small problems and too small for the big ones. His words were prophetic but they cut both ways. National governments can no longer cope with **pandemics**, global **warming**, international **terrorism**, unregulated global **finance** -- unless they act in **unison** in intergovernmental organizations. But, by the same token, Lilliputian **micro states**, emerging from the global separatist wave, would be **even** be **less** capable to deal with these problems. Global governance would then be completely controlled by the remaining, still international, **private** networks. A scary scenario to be sure. Does that mean we must stay put and freeze present borders in perpetuity. No, obviously not. Re-arrangements and restructuring are necessary. But the more sustainable answer may be in new forms of federalism rather than in the pure multiplication of sovereignties. In today's interdependent world, sovereignty is an illusion except if you are a superpower. The problems are too big while the means available to the new so-called 'sovereign' government are too small. The 'balkanization' of Eastern and Southern Europe after the First World War, led to the Second World War. **The balkanization of the world through** wide-spread **separatism** could **increase the probability of a third** one. Not an inspiring scenario.

# AI

## Defense

### No Impact

#### No AI impacts – advances are limited to specific applications and won’t surpass general human intelligence

Boden 2/23

Margaret A. Boden is Research Professor of Cognitive Science at the University of Sussex, UK, Project Syndicate, February 23, 2017, “Mapping the Future of AI”, https://www.project-syndicate.org/commentary/artificial-intelligence-no-singularity-by-margaret-a--boden-2017-02

Beyond these innovations, we can expect to see countless more examples of what were once called “expert systems”: AI applications that aid, or even replace, human professionals in various specialties. Similarly, robots will be able to perform tasks that could not be automated before. Already, robots can carry out virtually every role that humans once filled on a warehouse floor. Given this trend, it is not surprising that some people foresee a point known as the “Singularity,” when AI systems will exceed human intelligence, by intelligently improving themselves. At that point, whether it is in 2030 or at the end of this century, the robots will truly have taken over, and AI will consign war, poverty, disease, and even death to the past. To all of this, I say: Dream on. Artificial general intelligence (AGI) is still a pipe dream. It’s simply too difficult to master. And while it may be achieved one of these days, it is certainly not in our foreseeable future. But there are still major developments on the horizon, many of which will give us hope for the future. For example, AI can make reliable legal advice available to more people, and at a very low cost. And it can help us tackle currently incurable diseases and expand access to credible medical advice, without requiring additional medical specialists. In other areas, we should be prudently pessimistic – not to say dystopian – about the future. AI has worrying implications for the military, individual privacy, and employment. Automated weapons already exist, and they could eventually be capable of autonomous target selection. As Big Data becomes more accessible to governments and multinational corporations, our personal information is being increasingly compromised. And as AI takes over more routine activities, many professionals will be deskilled and displaced. The nature of work itself will change, and we may need to consider providing a “universal income,” assuming there is still a sufficient tax base through which to fund it. A different but equally troubling implication of AI is that it could become a substitute for one-on-one human contact. To take a trivial example, think about the annoyance of trying to reach a real person on the phone, only to be passed along from one automated menu to another. Sometimes, this is vexing simply because you cannot get the answer you need without the intervention of human intelligence. Or, it may be emotionally frustrating, because you are barred from expressing your feelings to a fellow human being, who would understand, and might even share your sentiments. Other examples are less trivial, and I am particularly worried about computers being used as “carers” or “companions” for elderly people. To be sure, AI systems that are linked to the Internet and furnished with personalized apps could inform and entertain a lonely person, as well as monitor their vital signs and alert physicians or family members when necessary. Domestic robots could prove to be very useful for fetching food from the fridge and completing other household tasks. But whether an AI system can provide genuine care or companionship is another matter altogether. Those who believe that this is possible assume that natural-language processing will be up to the task. But “the task” would include having emotionally-laden conversations about people’s personal memories. While an AI system might be able to recognize a limited range of emotions in someone’s vocabulary, intonation, pauses, or facial expressions, it will never be able to match an appropriate human response. It might say, “I’m sorry you’re sad about that,” or, “What a lovely thing to have happened!” But either phrase would be literally meaningless. A demented person could be “comforted” by such words, but at what cost to their human dignity? The alternative, of course, is to keep humans in these roles. Rather than replacing humans, robots can be human aids. Today, many human-to-human jobs that involve physical and emotional caretaking are undervalued. Ideally, these jobs will gain more respect and remuneration in the future. But perhaps that is wishful thinking. Ultimately, the future of AI – our AI future – is bright. But the brighter it becomes, the more shadows it will cast.

#### AI not a threat

Tenner 14

Edward Tenner is author of Why Things Bite Back: Technology and the Revenge of Unintended Consequences and Our Own Devices: How Technology Remakes Humanity. He is a visiting researcher in the Rutgers Department of History and the Princeton Center for Arts and Cultural Policy Studies, The American, February 7, 2014, "Could Computers Get Too Smart?", http://www.american.com/archive/2014/february/could-computers-get-too-smart

Kurzweil, who has proposed his own model of the mind, believes that the apparent complexity of the brain may be the result of simple rules, just as a six-character equation is enough to generate the ultra-intricate graphic called the Mandelbrot Set. IBM is investing $1 billion in its supercomputer Watson, which defeated human Jeopardy! champions. This project does not try to replicate the human brain’s structure — Watson could make errors no skilled human contestant would, like considering Toronto a U.S. city — but it also raises hopes and fears about the autonomy of machines. According to its CEO, Virginia M. Rometty, Watson “learns from its own experiences and from our interactions with it — and as it does, it keeps getting smarter. Its judgments keep getting better.” This might make it less necessary to hand-feed advanced machines with millions of commonsense facts; some critics of artificial intelligence, such as the British sociologist of science Harry Collins, believe that there is just too much of this “tacit knowledge” – including the countless facts about human relationships we take for granted — to specify. Even apart from the elusiveness of tacit knowledge, there are many reasons to doubt the imminence of a virtual human brain, let alone one that would become a self-multiplying, possibly civilization-threatening superintelligence. Artificial intelligence researchers themselves acknowledge that many tasks have taken far longer than their predecessors had predicted, leading in the past to disappointing results and funding slumps known as “AI winters.” Computer scientists specializing in computational complexity aren’t sure of whether brain modeling belongs in the category of problems so hard that centuries of hardware and software progress couldn’t solve them. Every so often, strikingly efficient computer procedures take experts by surprise, such as Google’s search algorithm in the 1990s. Artificial superintelligence may seem improbable, but history is full of great minds who said new inventions were impossible. As science fiction writer Arthur C. Clarke said, “Any sufficiently advanced technology is indistinguishable from magic.” In this case, will it be black magic? The most serious reason for skepticism about such technological developments is not a philosophical, physical, or psychological objection but one from everyday experience. I would take warnings about the dangers of superintelligent machines more seriously if today’s computers were able to make themselves more resistant to human hackers and to detect and repair their own faults. Organizations with access to some of the most advanced supercomputers and gifted programmers have been hacked again and again by individuals and groups with modest resources, compromising everything from credit card numbers to espionage secrets. We must balance charts of exponential growth of computing power, like those displayed by Kurzweil in How to Create a Mind, against more sobering ones of continuing electronic fragility.

### No Intelligence

#### No machine intelligence and no extinction

Zey 2k (Michael, Professor of Management at Montclair State University, “The Future Factor: The Five Forces Transforming Our Lives and Shaping Human Destiny”, p. 231-233)

Researchers who predict that robots and computers will achieve human capabilities base their contentions on their belief that soon these machines will not only compute but also "think." For decades science fiction novels and movies have featured smart robots with almost human-like thinking abilities. The movies 2001 and the recent Bicentennial Man predict a future of thinking machines. Can the computer, no matter how complex or massive, ever think in the sense that humans do? Such feats as Deep Blue's victory over Kasparov have cybernetic scientists and technicians murmuring that we are on the verge of creating a thinking machine to challenge the human species' monopoly on real intelligence. However, many in the cybernetic community express grave doubts over whether such machines actually perform human-like thinking. Marvin Minsky, MIT professor emeritus who is credited with initiating the Artificial Intelligence (AI) movement over 35 years ago, put such proficiency in perspective. According to Minsky, "Deep Blue might be able to win at chess, but it wouldn't know to come in from the rain." 10 Minsky's comment cut to the very heart of the thinking machine debate. Deep Blue's circuits, wiring, and program, its entire "being," if we can apply such a term to this contrivance, knows nothing except how to play chess. Concepts like "rain" do not even exist in Deep Blue's memory banks. Nor could it even imagine that the rain's overwhelming moisture could impair its circuits, or fashion a strategy to avoid such a misfortune. In addition, skeptics repeatedly remind us that human intelligence created Deep Blue. Yet, instead of celebrating Deep Blue's victory as a testimony to human intelligence, the Al community congratulates the machine for a job well done. Actually, this debate has already been settled in favor of humankind. Cambridge University physicist Roger Penrose combines information science, cognitive psychology, and physics to make a tightly constructed case against the possibility that computers can ever achieve human intelligence. In two books, The Emperors' New Mind and Shadows of the Mind, Penrose argued that the computer can never be conscious, and thus truly intelligent. 11 When our brains operate, we juggle many different thoughts and thought patterns before zeroing in on one unified pattern that becomes a conscious thought. Some physical mechanism must exist that helps us achieve, and maintain, this pattern of multiple simultaneously existing "protothoughts" before we focus in on the final thought. Penrose claims that this mechanism acts "non-locally." That is, some aspects of these thought patterns would have to act more or less at the same instant at widely separated locations of the brain, rather than spreading out relatively slowly, neuron by neuron. The genius of Penrose's theory is the way he applies quantum physics to the operation of the brain. His basic point is that before a thought, or the neural signals that constitute thought, enters our consciousness, it exists in a "quantum wave state." At the threshold of consciousness, the "wave-thoughts" then "collapse'' or coagulate into a single ordinary thought. If, as Penrose claims, such quantum mechanical phenomena are the operating principles behind human consciousness, the brain functions in a way that no mechanical device, computer or otherwise, can ever replicate. Computing devices, artificial neural networks, cannot simulate quantum mechanical phenomena.12 Penrose's theory seems to prove that no matter how complex or sophisticated a computer or computer network is it will never achieve consciousness. And if our smart machines can never reach consciousness, they will never be said to truly think!13 Donald Norman, VP of research at Apple and psychology professor at the University of California does not believe that in the foreseeable future computers and robots will come to mimic and/or surpass people. People and computers operate along completely different principles. According to Norman, the power of biological computation, that is, the human brain, emerges from "a large number of slow, complex devices—neurons—working in parallel through intricate electrical-chemical interactions."14 All this hardwiring enables the human to think in amazingly complex, abstract ways. On the other hand, computers have no problem finding square roots instantaneously, or adding large columns of eight-digit numbers without hesitation. The computer's ability to perform math with ease and dexterity results from its multitudinous, high-speed devices following binary logic. Errors in the operation of any of the underlying components are avoided either by careful design to minimize failure rates or through error-correcting coding in critical areas. Because of the computer's speed and accuracy, Norman says, we accord computers positive traits such as precise, orderly, undistractible, unemotional, and logical and label humans vague, disorganized, distractible, emotional, and illogical. According to Norman, we have our priorities backward. To appreciate humankind's natural superiority, he says, let us label humans creative, flexible, attentive to change, and resourceful and stigmatize computers as dumb, rigid, insensitive to change, and unimaginative.

## !T - AI Good

### Warming

#### Sustained AI research is the only way to solve climate change – space col, data handling, innovation.

Lamm 18 Ben Lamm [CEO - Hypergiant Industries, which creates emerging AI-driven technologies], 10/4/2018, "Artificial Intelligence Will Save Humanity, but Does Anyone Care?," OZY, https://www.ozy.com/news-and-politics/artificial-intelligence-will-save-humanity-but-does-anyone-care/90195/ SM

Artificial intelligence could be man’s best friend in the race for survival. Worrying about robots taking away jobs is missing the woods for the trees. From critical care to cyber security, 5G data speeds and AI could change lives. OZY's Fifth Generation Intelligence series tells you how. Human activity will almost certainly push global temperatures more than 2 degrees beyond pre-industrial levels. Even with aggressive action, some climate scientists are already suggesting it may be too late to reverse course. While there’s plenty of uncertainty in climate science, there’s no good reason to assume anything other than the worst possible outcome. And there’s a lot more certainty in human behavior. We’re short-sighted, fight-or-flight–driven animals. The threat of climate change is too slow, too distant, for the human brain to meaningfully react to it in the here and now. Climate scientists will keep running studies and modeling solutions that could reduce carbon dioxide levels more aggressively. And we should do that. But even with the most optimistic science out there, we will likely end up with catastrophic consequences on the ground, including widespread war, famine and an onslaught of disease. We need a backup plan like never before. THE ONLY RATIONAL CHESS MOVE IS TO TRIPLE-DOWN ON ARTIFICIAL INTELLIGENCE AND ALL OF ITS ENABLING TECHNOLOGIES. It’s time for humanity to get serious about getting out of Dodge. Colonization was traditionally a journey of discovery. Today it’s a journey for survival. Of course, the path between our science fiction novels and a serious colonization mission is rife with challenges. One of the most important and pressing today is our need for massive advancements in artificial intelligence. Without AI, humanity’s colonization hopes do not pass “Go.” Sadly, the essential role that AI plays in our long-term survival is obfuscated by a roaring debate about automation killing jobs in the next five years. The benefits of aggressive investment in AI so dramatically outweigh the costs that the only rational chess move is to triple-down on AI and all of its enabling technologies. The Chinese government seems to understand this better than the rest of the world. Its AI plan is so bold, so ambitious and so well-funded that most experts acknowledge it has the potential to reshape the geopolitical landscape for generations. Perhaps they understand what many do not: AI won’t just save humanity in the future; it’s doing it now, and it has been doing it for a while. HUMANITY’S UNSUNG HERO NASA is clear that AI is the future of space exploration. The reasons are fairly obvious: Wherever our probes go, they either need to be controlled from Earth, or have some sort of intelligence to guide even the most rudimentary decisions. Even small decisions that the average person wouldn’t think about, like choosing which areas of a planet are most interesting for taking pictures, are now made by artificial intelligence. The AEGIS system on the Mars rover Curiosity is just one current example, but AI has been playing a role since the early 2000s, when the Spirit and Opportunity rovers used the AutoNav system. Last year, Google’s machine learning discovered a new planet using NASA’s archived Kepler data. Consider that we’ve been sitting on this data for years, but a neural network was able to discover a planet in mere minutes. Yet right after the announcement of this remarkable achievement, Google felt the need to reassure astronomers worldwide that their jobs were safe: “What we’ve developed here is a tool to help astronomers have more impact,” Chris Shallue said on a conference call about the news. “It’s a way to increase the productivity of astronomers. It certainly won’t replace them at all.” Imagine that — AI had just massively reduced the time it takes to discover planets, to unravel the mysteries of the universe around us and light a path to a potential future home for our species, and somehow we’re worried about jobs. Even if you count only discoveries made without leaving our planet, we’re in the golden age of space exploration, a time when human knowledge is multiplying, all thanks to basic AI. Aiwillsave AN AI AT EVERY FRONTIER Many climate scientists have already made the claim that climate change is now a big data problem. AI, of course, is the best technology we have for processing and analyzing massive amounts of data. If you’re holding out hope that we can turn things around on Earth, the answer is pretty simple: We need more, and better, AI. In 2017, for the first time ever, federal scientists requested funds to accelerate research into climate engineering. They specifically cited two areas of research: removing carbon dioxide from our atmosphere and increasing Earth’s ability to reflect sunlight. This is the stuff of science-fiction novels, and the data analysis and modeling tasks alone are massive and prohibitive, but AI makes it possible to embark on these new paths to scientific discovery. Environmental science is seeing a similar lift thanks to AI. A recent report from the World Economic Forum cited opportunities to use AI for everything from smart grids to weather modeling and prediction, to biodiversity, agriculture, conservation and ocean health. If you’re less optimistic about Earth’s prospects, AI is already playing a role in microbiome research, which might hold answers to the most daunting block to long-term human space travel: human physiology. That our immune systems change in space isn’t just an interesting phenomenon — it could mean disaster for a 200- or 300-year colonization mission. NASA has active research projects in this area, and they learned a lot from astronaut Scott Kelly’s year on the International Space Station, such as the power required to safely send and land a heavy craft carrying three years’ worth of supplies for a mission to Mars. But it’s going to come down to AI to accelerate this research. Consider long-distance space travel and the delays in communication with Houston as spacecraft get farther away from Earth. The farther we want to go, the more dependent our missions are on AI that can make accurate, autonomous decisions in the face of unexpected conditions. It’s increasingly evident: Whether on Earth or in space, any solution to climate change, fight or flight, begins with AI.

#### AI solves warming, disease and hunger.

**Urban 15** (Tim Urban 15 {BS from Harvard, citing Ray Kurzweil, Google’s Director of Engineering, co-founder of the Singularity University hosted by NASA, and has a strong record of technology predictions. 1-22-2015. “The AI Revolution: Our Immortality or Extinction.” https://waitbutwhy.com/2015/01/artificial-intelligence-revolution-2.html}//JM

Nick Bostrom describes three ways a superintelligent AI system could function:6 As an oracle, which answers nearly any question posed to it with accuracy, including complex questions that humans cannot easily answer—i.e. How can I manufacture a more efficient car engine? Google is a primitive type of oracle. As a genie, which executes any high-level command it’s given—Use a molecular assembler to build a new and more efficient kind of car engine—and then awaits its next command. As a sovereign, which is assigned a broad and open-ended pursuit and allowed to operate in the world freely, making its own decisions about how best to proceed—Invent a faster, cheaper, and safer way than cars for humans to privately transport themselves. These questions and tasks, which seem complicated to us, would sound to a superintelligent system like someone asking you to improve upon the “My pencil fell off the table” situation, which you’d do by picking it up and putting it back on the table. Eliezer Yudkowsky, a resident of Anxious Avenue in our chart above, said it well: There are no hard problems, only problems that are hard to a certain level of intelligence. Move the smallest bit upwards [in level of intelligence], and some problems will suddenly move from “impossible” to “obvious.” Move a substantial degree upwards, and all of them will become obvious.7 There are a lot of eager scientists, inventors, and entrepreneurs in Confident Corner—but for a tour of the brightest side of the AI horizon, there’s only one person we want as our tour guide. Ray Kurzweil is polarizing. In my reading, I heard everything from godlike worship of him and his ideas to eye-rolling contempt for them. Others were somewhere in the middle—author Douglas Hofstadter, in discussing the ideas in Kurzweil’s books, eloquently put forth that “it is as if you took a lot of very good food and some dog excrement and blended it all up so that you can’t possibly figure out what’s good or bad.”8 Whether you like his ideas or not, everyone agrees that Kurzweil is impressive. He began inventing things as a teenager and in the following decades, he came up with several breakthrough inventions, including the first flatbed scanner, the first scanner that converted text to speech (allowing the blind to read standard texts), the well-known Kurzweil music synthesizer (the first true electric piano), and the first commercially marketed large-vocabulary speech recognition. He’s the author of five national bestselling books. He’s well-known for his bold predictions and has a pretty good record of having them come true—including his prediction in the late ’80s, a time when the internet was an obscure thing, that by the early 2000s, it would become a global phenomenon. Kurzweil has been called a “restless genius” by The Wall Street Journal, “the ultimate thinking machine” by Forbes, “Edison’s rightful heir” by Inc. Magazine, and “the best person I know at predicting the future of artificial intelligence” by Bill Gates.9 In 2012, Google co-founder Larry Page approached Kurzweil and asked him to be Google’s Director of Engineering.5 In 2011, he co-founded Singularity University, which is hosted by NASA and sponsored partially by Google. Not bad for one life. This biography is important. When Kurzweil articulates his vision of the future, he sounds fully like a crackpot, and the crazy thing is that he’s not—he’s an extremely smart, knowledgeable, relevant man in the world. You may think he’s wrong about the future, but he’s not a fool. Knowing he’s such a legit dude makes me happy, because as I’ve learned about his predictions for the future, I badly want him to be right. And you do too. As you hear Kurzweil’s predictions, many shared by other Confident Corner thinkers like Peter Diamandis and Ben Goertzel, it’s not hard to see why he has such a large, passionate following—known as the singularitarians. Here’s what he thinks is going to happen:Timeline Kurzweil believes computers will reach AGI by 2029 and that by 2045, we’ll have not only ASI, but a full-blown new world—a time he calls the singularity. His AI-related timeline used to be seen as outrageously overzealous, and it still is by many,6 but in the last 15 years, the rapid advances of ANI systems have brought the larger world of AI experts much closer to Kurzweil’s timeline. His predictions are still a bit more ambitious than the median respondent on Müller and Bostrom’s survey (AGI by 2040, ASI by 2060), but not by that much. Kurzweil’s depiction of the 2045 singularity is brought about by three simultaneous revolutions in biotechnology, nanotechnology, and, most powerfully, AI. What AI Could Do For Us Armed with superintelligence and all the technology superintelligence would know how to create, ASI would likely be able to solve every problem in humanity. Global warming? ASI could first halt CO2 emissions by coming up with much better ways to generate energy that had nothing to do with fossil fuels. Then it could create some innovative way to begin to remove excess CO2 from the atmosphere. Cancer and other diseases? No problem for ASI—health and medicine would be revolutionized beyond imagination. World hunger? ASI could use things like nanotech to build meat from scratch that would be molecularly identical to real meat—in other words, it would be real meat. Nanotech could turn a pile of garbage into a huge vat of fresh meat or other food (which wouldn’t have to have its normal shape—picture a giant cube of apple)—and distribute all this food around the world using ultra-advanced transportation. Of course, this would also be great for animals, who wouldn’t have to get killed by humans much anymore, and ASI could do lots of other things to save endangered species or even bring back extinct species through work with preserved DNA. ASI could even solve our most complex macro issues—our debates over how economies should be run and how world trade is best facilitated, even our haziest grapplings in philosophy or ethics—would all be painfully obvious to ASI.

#### Climate change is a complex problem and human solutions haven’t worked well enough – AI innovation could save millions

Joshinav 10/28 (Joshinav, Naveen. [Naveen Joshi, is Founder and CEO of Allerin, which develops engineering and technology solutions focused on optimal customer experiences. Naveen works in AI, IoT and Blockchain. An influencer with a half a million followers, he is a highly seasoned professional with more than 20 years of comprehensive experience in customizing open source products for cost optimizations of large scale IT deployment. Naveen is a conference speaker on IoT , AI and Data Science] “Winter Is Coming: How AI Can Help Tackle Climate Change.” Application Development, 28 Oct. 2019, [www.allerin.com/blog/winter-is-coming-how-ai-can-help-tackle-climate-change](http://www.allerin.com/blog/winter-is-coming-how-ai-can-help-tackle-climate-change).) // Lex CH

Although climate change is a human-made problem, it affects all living species. The problem has only got severe in recent years so much so that influential people like innovators, public figures, and celebrities alike are raising awareness about climate change and doing their bit to stop it. Climate change has become a complex problem, and it cannot be solved completely using basic solutions. That’s where technologies like artificial intelligence step in. Artificial intelligence can be used to analyze the current causes of climate change, predict future scenarios, and even create new products and services that can help minimize the causes and effects of climate change. Leveraging AI for climate change may not work as a silver bullet, but it can significantly help in our fight against it. Leveraging AI for climate change We need to act now and act smartly to tackle climate change. From bringing simple changes in our daily habits to adopting complex technological solutions to combat climate change, every step matters. AI can assist in our battle for thwarting climate change in the following ways: AI for climate change Providing better weather predictions Spotting the early warning signs of a catastrophic event can help save lives and reduce damage to property. By using AI for climate change monitoring, scientists are able to identify dangerous events such as tropical cyclones and atmospheric rivers. This can significantly help minimize casualties and loss to movable assets as people can be relocated to safer areas well in advance. With further advancements in artificial intelligence and machine learning, other events such as floods or famine can be predicted well in advance. Such accurate predictions can not only help during a disaster but also help prevent it altogether by allowing us to control the major sources of air pollution and greenhouse emissions that ultimately contribute to climate change. AI can also help us gain new insights into climate change through climate modeling. Climate models can simulate the interactions of important aspects of climate, including ice, atmosphere, oceans, and land surface. With AI and machine learning, the model can be used to simulate future events and help isolate places severely affected by climate change. Better predictions can help governments draft better climate policies, prepare governments and citizens alike for change, and tap uncovered areas to find solutions for climate change. Developing smart products for smart homes We are headed for a smart-home future where every device in our homes will be internet-connected and ‘smart.’ Manufacturers can leverage AI technologies to ensure that these devices cut down on their greenhouse emissions. These products work the same way as regular smart devices. However, they can play a huge part in preserving the environment. Such devices include; Smart thermostats to regulate energy consumption According to the U.S Energy Information Administration, only 3% of US households use a smart thermostat. The thermostat can observe and learn usage patterns and can program itself accordingly. This not only eliminates the need for human intervention but also helps reduce power consumption. A smart thermostat can identify external conditions such as temperature and humidity and adjust the indoor temperature accordingly. They can also automatically adjust the temperature depending on the time of the day or whether the user is at home or away. A smart thermostat can help save 10% on heating and 15% on cooling. Smart water solutions to conserve water American households utilize gallons of water daily for maintaining their landscapes. Smart irrigation solutions can help save up to 9,000 gallons of water per household every year. AI-enabled smart devices can gather and analyze the local weather data and update user whether to water the lawn or not, in case of expected rains. Other smart devices can incorporate sensors to warn users of water wastage. Zeroing on the major sources of climate change Power plants are a major source of harmful emissions. Even though nuclear energy proves to be an efficient method of energy production with low carbon emissions, we are yet to harness it in a safe and economical way. Thus, coal power plants continue to remain a major source of energy production. Artificial intelligence can help track the sources of greenhouse gas emissions from power plants. Google is already providing grants to a non-profit organization for its satellite imagery system. The satellite can measure power plant emissions from space and can make the information available to the public. AI technology will use the latest algorithms to detect and track power plant emissions. The project will combine data from multiple sources for maximum accuracy. Regulations can then be imposed by governments or international organizations on power plants generating excessive quantities of greenhouse gases than the prescribed limit. Upgrading the current procedures to minimize emissions Artificial intelligence can be used to streamline the supply chain processes in the manufacturing, retail, fashion, and food industries to make them more environment-friendly. AI can help minimize inefficiencies, thus helping reduce carbon emissions. AI can also help in the prediction of the supply and demand cycle. Businesses can, therefore, plan their operations accordingly based on market demands and cut down on unnecessary power consumption. They can even switch towards more eco-friendly methods of production, packaging, and transportation to reduce their impact on the environment. Businesses can also reap financial benefits by implementing these efficient work methods.

### Med Tech

#### Medical AI is being developed now and is expected to improve significantly by 2025.

[Grandview Research (2019), Grand View Research is an India & U.S. based market research and consulting company, registered in the State of California and headquartered in San Francisco that provides syndicated research reports, customized research reports, and consulting services, Artificial Intelligence In Healthcare Market Size, Share & Trends Analysis Report By Component (Hardware, Software, Services), By Application, By Region, Competitive Insights, And Segment Forecasts, 2019 – 2025]//CHS PK

The global artificial intelligence in healthcare market size valued at USD 2.5 billion in 2018 and is expected to grow at a compound annual growth rate (CAGR) of 41.5% from 2019 to 2025. The growing need for loweringhealthcare costs, growing importance of big data in healthcare, rising adoption of precision medicine, and declining hardware costs are some factors driving growth. In addition, increasing applicability of AI-based tools in medical care and rise in venture capital investments can be attributed to the surge in demand for this technology. For instance, CarePredict, Inc. uses AI technology to monitor changes in behavior patterns and activity for early detection of health issues.

Increasing number of cross-industry partnerships is expected to boost adoption of AI in the healthcare sector, which is further responsible for its lucrative growth rate. In September 2018, GNS Healthcare entered into a cross-industry partnership with Alliance and Amgen for [clinical trials](https://www.grandviewresearch.com/industry-analysis/global-clinical-trials-market) in oncology. The collaboration was aimed at applying data from clinical trials and Artificial Intelligence (AI) to identify factors that expedite treatment responses in metastatic Colorectal Cancer (CRC) patients. Likewise, Microsoft announced partnership with Apollo Hospitals, one of the prominent healthcare systems in India, in March 2018. The partnership is focused on developing and deploying new machine learning models for predicting the risk of developing cardiac diseases and aid doctors in treatment planning. Number of artificial intelligence start-ups in healthcare sector has significantly grown in past few years, and the trend is expected to be the same in the coming years, which will in turn, will positively impact the market. Rise in venture capital funding in this domain is a key factor accountable for increase in the number of these start-ups. For instance, in July 2018, Kleiner Perkins and GV invested USD 21 million in Viz.ai-an AI in healthcare start-up. Similarly, HealthPlix Technologies Pvt. Ltd. raised USD 3 million in a Series A funding round led by Kalaari capital and IDG Ventures India in July 2018. Some of the prominent venture capitalist firms operating in this sector are ACCEL PARTNERS, Data Collective, General Catalyst Partners, Khosla Ventures, and others. Adoption of AI in healthcare is growing, with rise in focus on improving quality of patient care by utilizing artificial intelligence in various aspects of healthcare services, such as virtual assistants & surgeries. The AI-based tools, such as clinical decision support systems & voice recognition software, aid in streamlining workflow processes in hospitals and improving medical care, thereby enhancing patient experience.

#### And, AI development is key to prevent and control disease outbreak.

Ghozzi 19 [Stephane Ghozzi (2019), Data Scientist at the Helmholtz Center for Infection Research, Draft for a Call for Topic Group Participation: Standardized benchmarking of “AI for Outbreak Detection”, TELECOMMUNICATION STANDARDIZATION SECTOR, 11-13-2019]//CHS PK

Infectious disease outbreaks pose a major risk to public health and are of global concern. Many established infectious diseases cause the death of millions of people every year and new infectious diseases are emerging. According to a WHO ranking, infectious diseases are ranked in the top 10 causes of death worldwide.  
However, early detection of outbreaks can prompt fast interventions to limit spread of the disease or even prevent an outbreak altogether. Improved algorithms for outbreak detection can save lives, increase quality of life and will benefit the overall health of the world population.

Role of AI

AI algorithms can increase the timeliness and accuracy of outbreak detection, and further have the potential to improve an understanding of the warnings and the disease spread itself. AI algorithms are particularly powerful in incorporating multiple data sources with diverse properties. The integration of high quality data sources, from e.g. mandatory reporting systems and laboratory tests, with data from real-time-surveillance systems is crucial to achieve earlier and more comprehensive detection of notifiable and non-notifiable pathogens. Different syndromic surveillance systems and valuable external data sources (google trends, health apps) can be incorporated. The gain of additional information on the underlying causes, by using explainable AI approaches, further enables for more specific actions to be taken for prevention.

# Heg

## Defense

#### Hegemony is unsustainable — executive oscillation, dollar flight, and polarization all make American hegemony unsustainable — it’s due to structural factors that supersede Trump.

**Drezner, 19** — Daniel W. Drezner, Ph.D. in political science from Stanford University, is Professor of International Politics at the Fletcher School of Law and Diplomacy. (4-16-2019; "This Time Is Different: Why U.S. Foreign Policy Will Never Recover" *Foreign Affairs*; https://www.foreignaffairs.com/articles/2019-04-16/tgrime-different; //GrRv)

But **this time** really **is different**. Just when many of the **sources** of **American power are ebbing**, many of the **guardrails** that have kept **U.S. foreign policy on track** have been **worn down**. It is tempting to pin this degradation on **Trump** and his retrograde foreign policy views, but the erosion **predated** him by a **good long while**. Shifts in the way Americans debate and conduct foreign policy will make it much more difficult to right the ship in the near future. Foreign policy discourse was the last preserve of bipartisanship, but political polarization has irradiated that marketplace of ideas. Although **future presidents** will try to restore the **classical version** of U.S. foreign policy, in **all likelihood**, it **cannot be revived.**

This time really is different.

The American foundations **undergirding the liberal international order** are **in grave danger**, and it is **no longer possible** to take the pillars of that order for **granted**. Think of the current moment as a game of Jenga in which multiple pieces have been removed but the tower still stands. As a result, some observers have concluded that the structure remains sturdy. But in fact, it is lacking many important parts and, on closer inspection, is teetering ever so slightly. Like a Jenga tower, the order will continue to stand upright—right until the moment it collapses. Every effort should be made to preserve the liberal international order, but it is also time to start thinking about what might come after its end.

The gravity of the problem is dawning on some members of the foreign policy community. Progressives are debating among themselves whether and how they should promote liberal values abroad if they should return to power. Conservatives are agonizing over whether the populist moment represents a permanent shift in the way they should think about U.S. foreign policy. Neither camp is really grappling with the end of equilibrium, however. The question is not what U.S. foreign policy can do after Trump. The question is whether there is any viable grand strategy that can endure past an election cycle.

THE GOOD OLD DAYS

In foreign policy, failures garner more attention than successes. During the Cold War, the “loss of China,” the rise of the Berlin Wall, the Vietnam War, the energy crisis, and the Iran hostage crisis all overshadowed the persistently effective grand strategy of containment. Only once the Soviet Union broke up peacefully was the United States’ Cold War foreign policy viewed as an overarching success. Since then, the wars in Afghanistan, Iraq, Libya, and Syria, along with the 2008 financial crisis and the rise of populism, have dominated the discussion. It is all too easy to conclude that the United States’ recent foreign policy has been an unmitigated disaster. At the same time that all these negative developments were taking place, however, underlying trends were moving in a more U.S.-friendly direction. The number of interstate wars and civil wars was falling dramatically, as was every other metric of international violence. Democracy was spreading, liberating masses of people from tyranny. Globalization was accelerating, slashing extreme poverty. The United States could take a great deal of credit for these gains, because the liberal order it nurtured and expanded had laid the foundations for decades of relative peace and prosperity. Washington made mistakes, of course, such as invading Iraq and forcing countries to remove restrictions on the flow of capital across their borders. As misguided as these errors were, and as much as they alienated allies in the moment, they did not permanently weaken the United States’ position in the world. U.S. soft power suffered in the short term but recovered quickly under the Obama administration. The United States still managed to attract allies, and in the case of the 2011 intervention in Libya, it was NATO allies begging Washington to use force, not vice versa. Today, the United States has more treaty allies than any other country in the world—more, in fact, than any country ever. The United States was able to weather the occasional misstep in large part because its dominance rested on such sturdy foundations. Its geographic blessings are ample: bountiful natural resources, two large oceans to the east and the west, and two valued partners to the north and the south. The country has been so powerful for so long that many of its capabilities seem to be fundamental constants of the universe rather than happenstance. The United States has had the most powerful military in the world since 1945, and its economy, as measured by purchasing power parity, became the biggest around 1870. Few people writing today about international affairs can remember a time when the United States was not the richest and most powerful country. Long-term hegemony only further embedded the United States’ advantage. In constructing the liberal international order, Washington created an array of multilateral institutions, from the UN Security Council to the World Bank, that privileged it and key allies. Having global rules of the game benefits everyone, but the content of those rules benefited the United States in particular. The Internet began as an outgrowth of a U.S. Department of Defense initiative, providing to the United States an outsize role in its governance. American higher education attracts the best of the best from across the world, as do Silicon Valley and Hollywood, adding billions of dollars to the U.S. economy. An immigrant culture has constantly replenished the country’s demographic strength, helping the United States avoid the aging problems that plague parts of Europe and the Pacific Rim. The United States has also benefited greatly from its financial dominance. The U.S. dollar replaced the British pound sterling as the world’s reserve currency 75 years ago, giving the United States the deepest and most liquid capital markets on the globe and enhancing the reach and efficacy of its economic statecraft. In recent decades, Washington’s financial might has only grown. Even though the 2008 financial crisis began in the American housing market, the end result was that the United States became more, rather than less, central to global capital markets. U.S. capital markets proved to be deeper, more liquid, and better regulated than anyone else’s. And even though many economists once lost sleep over the country’s growing budget deficits, that has turned out to be a non-crisis. Many now argue that the U.S. economy has a higher tolerance for public debt than previously thought. Diplomatically, all these endowments ensured that regardless of the issue at hand, the United States was always viewed as a reliable leader. Its dense and enduring network of alliances and partnerships signaled that the commitments Washington made were seen as credible. American hegemony bred resentment in some parts of the globe, but even great-power rivals trusted what the United States said in international negotiations. At the same time as the international system cemented the United States’ structural power, the country’s domestic politics helped preserve a stable foreign policy. A key dynamic was the push and pull between different schools of thought. An equilibrium was maintained—between those who wanted the country to adopt a more interventionist posture and those who wanted to husband national power, between those who preferred multilateral approaches and those who preferred unilateral ones. When one camp overreached, others would seize on the mistake to call for a course correction. Advocates of restraint invoked the excesses of Iraq to push for retrenchment. Supporters of intervention pointed to the implosion of Syria to argue for a more robust posture. Thanks to the separation of powers within the U.S. government, no one foreign policy camp could accrue too much influence. When the Nixon White House pursued a strictly realpolitik approach toward the Soviet Union, Congress forced human rights concerns onto the agenda. When the Obama administration was leery of sanctioning Iran’s central bank, congressional hawks forced it to take more aggressive action. Time and time again, U.S. foreign policy reverted to the mean. Overreaching was eventually followed by restraint. Buck-passing led to leading. The results of these crosscutting pressures were far from perfect, but they ensured that U.S. foreign policy did not deviate too far from the status quo. Past commitments remained credible into the future.

For decades, these dynamics, global and domestic, kept crises from becoming cataclysmic. U.S. foreign policy kept swinging back into equilibrium. So what has changed? Today, there is **no more equilibrium**, and the **structural pillars** of American power are **starting to buckle.**

THE NEW NORMAL

Despite the remarkable consistency of U.S. foreign policy, behind the scenes, some elements of American power were **starting to decline**. As measured by purchasing power parity, the United States stopped being the **largest economy** in the world a few **years ago.** Its **command of the global commons** has **weakened** as China’s and Russia’s **asymmetric capabilities** have improved. The accumulation of “**forever wars**” and **low-intensity conflicts** has **taxed** the United States’ armed forces.

Outward consistency also masked the dysfunction that was afflicting the domestic checks on U.S. foreign policy. For starters, public opinion has **ceased to act** as a **real constraint on decision-makers**. Paradoxically, the very things that have ensured U.S. national security—geographic isolation and overwhelming power—have also led most Americans to not think about foreign policy, and rationally so. The trend began with the switch to an all-volunteer military, in 1973, which allowed most of the public to stop caring about vital questions of war and peace. The apathy has only grown since the end of the Cold War, and today, poll after poll reveals that Americans **rarely**, if **ever**, base their vote on **foreign policy considerations**.

The marketplace of ideas has broken down, too. The **barriers to entry** for **harebrained foreign policy schemes** have **fallen away** as Americans’ **trust in experts** has eroded. Today, the United States is in the midst of a debate about whether a wall along its southern border should be made of concrete, have see-through slats, or be solar-powered. The ability of experts to kill bad ideas isn’t what it used to be. The cognoscenti might believe that their informed opinions can steady the hands of successive administrations, but they are operating in hostile territory.

To be fair, the hostility to foreign policy experts is not without cause. The interventions in Afghanistan, Iraq, and Libya were massive screwups. Despite what the experts predicted, globalization has not transformed China into a Jeffersonian democracy. The supposedly infallible advice enshrined in the Washington consensus ended up triggering multiple financial crises. Economists and foreign affairs advisers advocated austerity, despite the pain it caused the poor and the middle class, and consistently cried wolf about an increase in interest rates that has yet to come. No wonder both Barack Obama and Trump have taken such pleasure in bashing the Washington establishment.

**Institutional checks** on the president’s **foreign policy prerogatives** have also **deteriorated**—primarily because the other branches of government have voluntarily surrendered them. The passage of the Smoot-Hawley Tariff Act of 1930, which exacerbated the Great Depression, showed that Congress could not responsibly execute its constitutional responsibilities on trade. With the 1934 Reciprocal Trade Agreements Act, it delegated many of those powers to the president, marking the beginning of a sustained decline in congressional oversight. More recently, political polarization has rendered Congress a dysfunctional, petulant mess, encouraging successive administrations to enhance the powers of the executive branch. Nor has the judicial branch acted as much of an impediment. The Supreme Court has persistently deferred to the president on matters of national security, as it did in 2018 when it ruled in favor of the Trump administration’s travel ban.

Foreign policy analysts largely celebrated this concentration of power in the executive branch, and prior to Trump, their logic seemed solid. They pointed to the public’s ignorance of and Congress’ lack of interest in international relations. As political gridlock and polarization took hold, elected Democrats and Republicans viewed foreign policy as merely a plaything for the next election. And so most foreign policy elites viewed the president as the last adult in the room.

What they failed to plan for was the election of a president who displays the **emotional and intellectual maturity** of a **toddler**. As a candidate, Trump gloried in beating up on foreign policy experts, asserting that he could get better results by relying on his gut. As president, he has governed mostly by **tantrum**. He has **insulted** and **bullied U.S. allies**. He has launched **trade wars** that have accomplished little beyond **hurting the U.S. economy**. He has said that he **trusts Russian President Vladimir Putin** more than his **own intelligence briefers**. His administration has withdrawn from an array of multilateral agreements and badmouthed the institutions that remain. The repeated attacks on the EU and NATO represent a bigger strategic mistake than the invasion of Iraq. In multiple instances, his handpicked foreign policy advisers have attempted to lock in decisions before the president can sabotage them with an impulsive tweet. Even when his administration has had the germ of a valid idea, Trump has executed the resulting policy shifts in the most ham-handed manner imaginable.

Most of these foreign policy moves have been controversial, counterproductive, and perfectly legal. The same steps that **empowered the president** to **create foreign policy** have permitted **Trump** to **destroy** what his predecessors spent **decades** preserving. The other branches of government endowed the White House with the foreign policy equivalent of a Ferrari; the current occupant has acted like a child playing with a toy car, convinced that he is operating in a land of make-believe.

After Trump, a new president will **no doubt** try to restore [**reasonability**] ~~sanity~~ to **U.S. foreign policy**. Surely, he or she will **reverse** the travel ban, halt the **hostile rhetoric toward** long-standing **allies**, and **end the attacks** on the world trading system. These patches will **miss the deeper problem, however**. **Political polarization** has **eroded** the notion that presidents need to **govern from the center**. Trump has **eviscerated that idea**. The odds are decent that a left-wing populist will replace the current president, and then an archconservative will replace that president. The **weak constraints on the executive branch** will only make things worse. Congress has evinced little interest in playing a constructive role when it comes to foreign policy. The public is **still checked out on world** politics. The combination of worn-down guardrails and presidents emerging from the ends of the political spectrum may well whipsaw U.S. foreign policy between “America first” and a new Second International. The very concept of a **consistent, durable grand strategy** will **not be sustainable.**

The combination of worn-down guardrails and presidents emerging from the ends of the political spectrum may well whipsaw U.S. foreign policy between “America first” and a new Second International.

In **that event**, only the **credulous** will consider **U.S. commitments credible**. **Alliances will fray,** and other countries will find it easier to **flout global norms**. All the while, the scars of the Trump administration will linger. The vagaries of the current administration have already forced a mass exodus of senior diplomats from the State Department. That human capital will be difficult to replace. For the past two years, the number of international students who have enrolled in U.S. university degree programs has fallen as nativism has grown louder. It will take a while to convince foreigners that this was a temporary spasm. After the Trump administration withdrew from the Iran nuclear deal, it forced **SWIFT**, the **private-sector network** that facilitates **international financial transactions**, to comply with **unilateral U.S. sanctions** against Iran, spurring China, France, Germany, Russia, and the United Kingdom to create an **alternative payment system**. That means little right now, but in the long run, **both U.S. allies** and **U.S. rivals** will **learn to avoid** relying on the **dollar**.

Perhaps most important, the Trump administration has **unilaterally surrendered** the **set of ideals** that guided U.S. policymakers for decades. It is entirely proper to debate how much the United States should prioritize the promotion of human rights, democracy, and the rule of law across the world. What should be beyond debate, however, is that it is worthwhile to promote those values overseas and enshrine them at home. Trump’s ugly rhetoric makes a mockery of those values. Although a future president might **sound better on these issues**, both **allies** and **rivals** will **remember the current moment**. The seeds of doubt have been planted, and they will one day sprout.

The factors that give the United States an advantage in the international system—deep capital markets, liberal ideas, world-class higher education—have winner-take-all dynamics. Other actors will be reluctant to switch away from the dollar, Wall Street, democracy, and the Ivy League. These sectors can withstand a few hits. Excessive use of **financial statecraft**, alliances with **overseas populists**, or **prolonged bouts** **of anti-immigrant hysteria**, however, will force even **close** allies to start **thinking about alternatives**. The American advantage in these areas will go bankrupt much like Mike Campbell in The Sun Also Rises did: “gradually and then suddenly.” Right now, the United States’ Jenga tower is still standing. Remove a few more blocks, however, and the wobbling will become noticeable to the unaided eye.

### No Heg

#### Heg isn’t real

**Reich and Lebow, 17**—Professor of Global Affairs at Rutgers AND Professor of International Political Theory at the Department of War Studies (Simon and Richard Ned, “Influence and hegemony: shifting patterns of material and social power in world politics,” All Azimuth, 6.1 (Jan. 2017): p17, dml)

A more dispassionate view suggests that American hegemony was very short lived and quickly eroded. By any serious economic measure, it stopped serving as the world's economic hegemon decades ago. In 1944, the US GDP peaked at 35 percent of the world total, a figure that had dropped to 25 by 1960 and 20 percent by 1980.36 Today, by way of comparison, It has fluctuated in recent years at around 25%, never approximating its peak. The US ran significant deficits during the Viet Nam war and delinked the dollar from the gold standard in 1971. (37) in the 1980s, the US ran up budget deficits and systematically reneged on its own liberal trading rules by introducing a variety of tariffs and quotas under the Reagan administration instead of bearing the costs of economic adjustments. (38) Contemporary policymakers have done the same to China. (39)

More specific figures support this general picture. Until the end of the 1960s, the US current account balance ran at zero or a small surplus. That position dramatically eroded in the 1980s, and the US current account deficit peaked at 6% in 2006, just before the financial crisis. (40) This took place at a time when there was a consistent decline in net US public and private savings. (41) American policies had the effect of making the US government and consumers increasingly reliant on foreign capital to finance their expenditures. Over-expenditure by individual Americans and their government--reflected in low personal savings rates coupled with increased government deficits--became important causes of global imbalances. (42)

The growth in American personal debt has been unmistakable: from a peak of 14.6% in 1975, and an average of around 9% in the 1980s, the American net savings rate declined to around zero by the turn of the century. It reached a low of-0.5% in 2005, a statistic not seen since during the Great Depression in 1933. (43) As savings plummeted, debt increased. By 2005, total U.S. household debt, Including mortgage loans and consumer debt, stood at $11.4 trillion. (44) A decade later, despite the salutary lessons of the Great Recession, It had increased $12.07 trillion. (45)

The US federal budget deficit grew in a similar fashion. Since the end of second Clinton Administration, the debt of the US government has increased annually. It went from $186.2bn inflation-adjusted dollars in 2002 to over $16.8 trillion by April of 2013. (46) The National Clock then calculated a figure: an average of nearly $53,500 owed per citizen. (47) it ballooned during the Obama administration. (48) Figures for the US trade deficit are just as illuminating. According to the US Census Bureau, the US has run a trade deficit in goods and services every year since 1969, with the exception of 1973 and 1975. Comparable to the budget deficit, these figures have worsened over time and have also ballooned since the turn of the century, peaking in 2006 on the eve of the financial crisis. (49)

Liberals and realists thus consistently ignore a wealth of economic data in proclaiming American postwar hegemony. The same is true in terms of its military capacity to achieve its foreign policy objectives. Triumph over Germany and Italy in World War ii, the invention and use of nuclear weapons to end the war with Japan, and America's nuclear arsenal all consolidated Americans' sense of themselves as hegemonic. The Cold War victory consolidated that view.

Yet military failures like MacArthur's push north in the Korean War, the Bay of Pigs invasion, Vietnam, and more recently, failed interventions in Lebanon, Somalia, Afghanistan and Iraq, were reconceived of as "victories" (Korea), inconsequential (the Bay of Pigs) or part and parcel of strategies that were, or will be, successful in the longer-term. Bush "hawks," for example, In revisionist fashion, hailed the Iraq invasion as the necessary prelude to the now-aborted Arab Spring years later, despite its unprecedented cost, while Afghanistan--America's longest serving war--Is reputed to have been a key component of a successful campaign to defeat al Qaeda. (50) For all of America's unprecedented military capacity, it is hard to reconcile this long list of questionable military interventions with the dominance that unipolarity and hegemony implies. Yet realists and liberals continue to apply these terms despite America's failures to achieved its prescribed policy goals stretching back over the last five decades.

More recently, liberals--and to a lesser extent realists--have convinced themselves that the role of this military is to ensure the global system's stability. Often this has been inaccurate if stability is equated with the absence of war. If we calculate 'war years' as a simple function of each war multiplied by its longevity, since 1945, the US has fought more war years than any other country in the world, with the possible exception of the UK and France. (51) A proportion of these wars have been justified by American policymakers as preventative interventions (such as the invasions of Iraq or Afghanistan) or humanitarian ones (such as the invasion of Grenada) and thus validated by a "just war" doctrine. Critics, however, claim it is hard to reconcile starting wars with maintaining stability, suggesting that these are merely a pretext for imperialism. (52) Even more mainstream pillars of the establishment--such as Richard Haass, who served in the Bush White House and is currently president of the Council on Foreign Relations--have written approvingly at times of the idea of an imperial US foreign policy. (53) Thus, by either the measure of starting wars or of winning them, American military capacity cannot be equated with hegemony. Its short preeminence has, nonetheless, been erringly rewritten as the longue duree.

### No Impact

#### No impact to hegemonic decline

**Preble 10** (8/3, Christopher Preble, director of foreign policy studies at the Cato Institute, taught history at St. Cloud State University and Temple University, was a commissioned officer in the U.S. Navy, Ph.D. in history from Temple University. “U.S. Military Power: Preeminence for What Purpose?” 8/3/10) <http://www.cato-at-liberty.org/u-s-military-power-preeminence-for-what-purpose/>)

Most in Washington still embraces the notion that America is, and forever will be, the world’s indispensable nation. Some scholars, however, questioned the logic of hegemonic stability theory from the very beginning. A number continue to do so today. They advance arguments diametrically at odds with the primacist consensus. Trade routes need not be policed by a single dominant power; the international economy is complex and resilient. Supply disruptions are likely to be temporary, and the costs of mitigating their effects should be borne by those who stand to lose — or gain — the most. Islamic extremists are scary, but hardly comparable to the threat posed by a globe-straddling Soviet Union armed with thousands of nuclear weapons. It is frankly absurd that we spend more today to fight Osama bin Laden and his tiny band of murderous thugs than we spent to face down Joseph Stalin and Chairman Mao. Many factors have contributed to the dramatic decline in the number of wars between nation-states; it is unrealistic to expect that a new spasm of global conflict would erupt if the United States were to modestly refocus its efforts, draw down its military power, and call on other countries to play a larger role in their own defense, and in the security of their respective regions.

#### And it doesn’t resolve any conflicts

**Fettweis 11**

Christopher, Professor of Political Science @ Tulane, Dangerous Times?: The International Politics of Great Power Peace, pg. 172-174

The primary attack on restraint, or justification of internationalism, posits that if the United States were to withdraw from the world, a variety of ills would sweep over key regions and eventually pose threats to U.S. security and/or prosperity. These problems might take three forms (besides the obvious if remarkably unlikely, direct threats to the homeland.). generalized chaos, hostile imbalances in Eurasia, and/or failed states. Historian Arthur Schlesinger was typical when he worried that restraint would mean "a chaotic, violent, and ever more dangerous planet." All of these concerns either implicitly or explicitly assume that the presence of the United States is the primary reason for international stability, and if that presence were withdrawn chaos would ensue. In other words, they depend upon hegemonic-stability logic. Simply stated, the hegemonic stability theory proposes that international peace is only possible when there is one country strong enough to make and enforce a set of rules. At the height of Pax Romana between 27 BC and 180 AD, for example, Rome was able to bring unprecedented peace and security to the Mediterranean. The Pax Britannica of the nineteenth century brought a level of stability to the high seas. Perhaps the current era is peaceful because the United States has established a de facto Pax Americana where no power is strong enough to challenge its dominance, and because it has established a set of rules that are generally in the interests of all countries to follow. Without a benevolent hegemon, some strategists fear, instability may break out around the globe.."'. Unchecked conflicts could cause humanitarian disaster and, in today's interconnected world, economic turmoil that would ripple throughout global financial markets. If the United States were to abandon its commitments abroad, argued Art, the world would "become a more dangerous place' and, sooner or later, that would 'redound to America's detriment."' If the massive spending that the United States engages in actually provides stability in the international political and economic systems, then perhaps internationalism is worthwhile. There are good theoretical and empirical reasons, however, to believe that U.S hegemony is not the primary cause of the current era of stability. First of all, the hegemonic-stability argument overstates the role that the United States plays in the system. No country is strong enough to police the world on its own. The only way there can be stability in the community of great powers is if self-policing occurs, if states have decided that their interests are served by peace. if no pacific normative shift had occurred among the great powers that was filtering down through the system, then no amount of international constabulary work by the United States could maintain stability. Likewise, if it is true that such a shift has occurred, then most of what the hegemon spends to bring stability would he wasted. The 5 percent of the world's population that live in the United States simply could not force peace upon an unwilling 95. At the risk of beating the metaphor to death, the United States maybe patrolling a neighborhood that has **already rid itself of** crime. Stability and unipolarity may be **simply coincidental**. In order for U.S. hegemony to be the reason for global stability, the rest of the world would have to expect reward for good behavior and fear punishment for bad. Since the end of the Cold War, the United States has not always proven to be especially eager to engage in humanitarian interventions abroad. Even rather incontrovertible evidence of genocide has not been sufficient to inspire action. Hegemonic stability can only take credit for influencing those decisions that would have ended in war without the presence, whether physical or psychological, of the United States. Ethiopia and Eritrea are hardly the only states that could go to war without the slightest threat of U.S. intervention. Since most of the world today is free to fight without U.S. involvement, **something else** **must be at work**. Stability exists in many places where no hegemony is present. Second, the limited empirical evidence we have suggests that there is little connection between the relative level of U.S. activism and international stability. During the 1990s the United States cut back on its defense spending fairly substantially. By 1998 the United States was spending $100 billion less on defense in real terms than it had in 1990,72 To internationalists, defense hawks, and other believers in hegemonic stability, this irresponsible peace dividend" endangered both national and global security. "No serious analyst of American military capabilities;' argued Kristol and Kagan, 'doubts that the defense budget has been cut much too far to meet America's responsibilities to itself and to world peac&'73 If the pacific trends were due not to U.S. hegemony but a strengthening norm against interstate war, however, one would not have expected an increase in global instability and violence. The verdict from the past two decades is fairly plain: The world grew' more peaceful while the United States cut its forces. No state seemed to believe that its security was endangered by a less-capable Pentagon, or at least none took any action that would suggest such a belief. No militaries were enhanced to address power vacuums; no security dilemmas drove mistrust and arms races; no regional balancing occurred once the stabilizing presence of the U.S. military was diminished. The rest of the world acted as if the threat of international war was not a pressing concern, despite the reduction in U.S. capabilities. The incidence and magnitude of global conflict declined while the United States cut its military spending under President Clinton, and it kept declining as the Bush Administration ramped spending back up. No complex statistical analysis should be necessary to reach the conclusion that the two are unrelated. It is also worth noting for our purposes that the United States was no less safe.

#### Best data disproves heg impact

Benjamin H. Friedman et al 13, research fellow in defense and homeland security studies; Brendan Rittenhouse Green, the Stanley Kaplan Postdoctoral Fellow in Political Science and Leadership Studies at Williams College; Justin Logan, Director of Foreign Policy Studies at the Cato Institute Fall 2013, “Correspondence: Debating American Engagement: The Future of U.S. Grand Strategy,” International Security, Vol. 38, No. 2, p. 181-199

Brooks et al. argue that the specter of U.S. power eliminates some of the most baleful consequences of anarchy, producing a more peaceful world. U.S. security guarantees deter aggressors, reassure allies, and dampen security dilemmas (p. 34). “By supplying reassurance, deterrence, and active management,” Brooks et al. write, primacy “reduces security competition and does so in a way that slows the diffusion of power away from the United States” (pp. 39–40). There are three reasons to reject this logic: security competition is declining anyway; if competition increases, primacy will have difficulty stopping it; and even if competition occurred, it would pose little threat to the United States.¶ an increasingly peaceful world. An array of research, some of which Brooks et al. cite, indicates that factors other than U.S. power are diminishing interstate war and security competition.2 These factors combine to make the costs of military aggression very high, and its benefits low.3¶ A major reason for peace is that conquest has grown more costly. Nuclear weapons make it nearly suicidal in some cases.4 Asia, the region where future great power competition is most likely, has a “geography of peace”: its maritime and mountainous regions are formidable barriers to conflict.5¶ Conquest also yields lower economic returns than in the past. Post-industrial economies that rely heavily on human capital and information are more difficult to exploit.6 Communications and transport technologies aid nationalism and other identity politics that make foreigners harder to manage. The lowering of trade barriers limits the returns from their forcible opening.7¶ Although states are slow learners, they increasingly appreciate these trends. That should not surprise structural realists. Through two world wars, the international system "selected against" hyperaggressive states and demonstrated even to victors the costs of major war. Others adapt to the changed calculus of military aggression through socialization.8¶ managing revisionist states. Brooks et al. caution against betting on these positive trends. They worry that if states behave the way offensive realism predicts, then security competition will be fierce even if its costs are high. Or, if nonsecurity preferences such as prestige, status, or glory motivate states, even secure states may become aggressive (pp. 36-37).9¶ These scenarios, however, are a bigger problem for primacy than for restraint. Offensive realist security paranoia stems from states' uncertainty about intentions; such states see alliances as temporary expedients of last resort, and U.S. military commitments are unlikely to comfort or deter them.10 Nonsecurity preferences are, by definition, resistant to the security blandishments that the United States can offer under primacy Brooks et al.'s revisionist actors are unlikely to find additional costs sufficient reason to hold back, or the threat of those costs to be particularly credible.¶ The literature that Brooks et al. cite in arguing that the United States restrains allies actually suggests that offensive realist and prestige-oriented states will be the most resistant to the restraining effects of U.S. power. These studies suggest that it is most difficult for strong states to prevent conflict between weaker allies and their rivals when the restraining state is defending nonvital interests; when potential adversaries and allies have other alignment options;11 when the stronger state struggles to mobilize power domestically12; when the stronger state perceives reputational costs for non-involvement;13 and when allies have hawkish interests and the stronger state has only moderately dovish interests.14¶ In other words, the cases where it would be most important to restrain U.S. allies are those in which Washington's efforts at restraint would be least effective. Highly motivated actors, by definition, have strong hawkish interests. Primacy puts limits on U.S. dovishness, lest its commitments lack the credibility to deter or reassure. Such credibility concerns create perceived reputational costs for restraining or not bailing out allies. The United States will be defending secondary interests, which will create domestic obstacles to mobilizing power. U.S. allies have other alliance options, especially in Asia. In short, if states are insensitive to the factors incentivizing peace, then the United States' ability to manage global security will be doubtful. Third-party security competition will likely ensue anyway.¶ costs for whom? Fortunately, foreign security competition poses little risk to the United States. Its wealth and geography create natural security. Historically, the only threats to U.S. sovereignty, territorial integrity, safety, or power position have been potential regional hegemons that could mobilize their resources to project political and military power into the Western Hemisphere. Nazi Germany and the Soviet Union arguably posed such threats. None exist today.¶ Brooks et al. argue that "China's rise puts the possibility of its attaining regional hegemony on the table, at least in the medium to long term" (p. 38). That possibility is remote, even assuming that China sustains its rapid wealth creation. Regional hegemony requires China to develop the capacity to conquer Asia's other regional powers. India lies across the Himalayas and has nuclear weapons. Japan is across a sea and has the wealth to quickly build up its military and develop nuclear weapons. A disengaged United States would have ample warning and time to form alliances or regenerate forces before China realizes such vast ambitions.

#### Heg fails and is terminally unsustainable – your authors are biased and paid off.

Shlapak, Senior International Policy Analyst at RAND Corporation, 3/20/2015 David A., “Towards a More Modest American Strategy”, Survival: Global Politics and Strategy, Volume 57 Issue 2, Pgs. 59-78,

The Unipolar Moment Is Over Since the fall of the Soviet Union, the world has experienced a situation unparalleled in the Westphalian era, and quite possibly since the heyday of Rome's dominance. For the past two decades, the United States has stood alone as the world's only remaining true great power.1 Even if this status did not afford the United States the ability to have its way at every turn, US primacy gave the country a freedom of strategic action – and particularly of military action – all but unseen in modern history. This unipolar moment, however, has been profoundly ahistorical, and was always fated to end. Whether we ascribe this to reversion to the norm, systemic rebalancing or the rise of a challenger, there can be little doubt that unquestioned US dominance is a tide that is ebbing. The analogy to the post-war economic system is instructive, if some-what depressing. In 1945, the United States was the only great power whose economy had not been devastated by the Second World War. America took advantage of this deeply aberrant circumstance not only to construct a domestic economy whose prosperous coat-tails its citizens still ride, but also to rebuild much of a shattered world. Perhaps most importantly, the United States used its economic dominance to put in place international institutions and arrangements that, almost seven decades later, remain the foundation of a global trade and financial order that has served the rest of the world as well as it has served America. The norms and structures established during the era of US economic hegemony ignited and sustained not just the revitalisation of Europe and Japan, but the rise of the ‘Asian tigers’ and other new economies, the success of which spelled the doom of American dominance itself. The relative decline of the US economy, in other words, was not only the inevitable result of an inescapable historical process – the world's recovery from the cataclysm of global war – but also the deliberate outcome of how the United States chose to use its unrivalled power. There is nothing to suggest that the United States’ time as the sole military great power will leave such a constructive legacy. This may, to some extent, be inevitable. The contemporary international economic order is broadly understood to be a positive-sum system, one in which the well-being of all participants can simultaneously increase. Conversely, the global security environment is typically seen as zero-sum; one actor's power gain must entail losses for others. This makes it very difficult to impose durable rules of the road for security interactions. Sadly, the residuum of US dominance may go beyond the absence of a positive inheritance – it may, in fact, be negative. America used its power to intervene in sometimes capricious ways, promulgated a doctrine of preventive and pre-emptive warfare, and warned the world at large that ‘either you are with us or you are with the terrorists’.2 America's ‘war on terror’ was in many quarters interpreted as a war on Islam, and the botched campaign in Afghanistan, among other consequences, has contributed to destabilising nuclear-armed Pakistan. The 2003 invasion of Iraq overthrew a reprehensible dictator but left behind a country in violent disarray, and created an opportunity for Iran to expand its regional influence. Afghanistan will not emerge from a decade-plus of US-led war as a secular democracy. American power could not keep down the price of oil, nudge Israel and Palestine towards a legitimate peace process (let alone a lasting peace) or halt genocides in Rwanda, Sudan and elsewhere. It did not stop North Korea from building a nuclear weapon, nor does it seem to be dissuading Iran from at minimum developing the capability to pursue one. While the world may not be worse off for America's exercise of its enormous power over the past 20-odd years, it is not at all clear that it is better off. Nor has America's military pre-eminence paid dividends at home. Including future costs for veterans’ medical care and disability payments, a Harvard study concluded that the wars in Afghanistan and Iraq will wind up costing the US between $4 and $6 trillion.3 Over 6,700 American service members have lost their lives in the two wars, with another 51,000 wounded in action.4 Disputes over the appropriate uses of US military muscle have contributed to the polarisation of American political life. There is also little evidence that the roughly $12trn the United States has spent on its military since the end of the Cold War has propelled the economy forward. During that span, the years when defence spending as a percentage of GDP was at its lowest were those that experienced the greatest economic growth.5 Some analyses have concluded that the ‘multiplier effect’ of defence spending – the total impact on the economy of every dollar expended on the military – is actually less than one (meaning GDP increases by less than a dollar for every one the Pentagon spends), and far lower than that of other forms of government spending.6 Meanwhile, the United States in 2012–13 had a larger defence budget than the next eight biggest military spenders combined.7 While it can certainly be argued that no other nation has global responsibilities like America's, that gap is still remarkable. Strategy looks out, not in Military strength, however, is not the same as ‘leadership’. All parties to the official debate about the future of national security appear to agree on an expansive definition of America's role in the world. The administration's 2012 guidance gave the game away with its title, ‘Sustaining US Global Leadership’. In his prefatory remarks to that document, President Barack Obama commits the country to a future with an ‘even stronger’ military that ‘preserves American global leadership [and] maintains military superiority’, and asserts that we live ‘in a changing world that demands our leadership’.8 This belief is bipartisan. In a speech to the Veterans of Foreign Wars in July 2012, then-candidate Mitt Romney said: I do not view America as just one more point on the strategic map, one more power to be balanced. I believe our country is the greatest force for good the world has ever known, and that our influence is needed as much now as ever. And I am guided by one overwhelming conviction and passion: This century must be an American Century.9 The world is indeed complicated and messy, but this does not mean that it demands American global leadership. The world has always been complicated and messy; the human tendency to see our own time as uniquely problematic inevitably distorts our perspective. Even were the contemporary scene uniquely complex, it would not put a premium on US power. Furthermore, it is not clear that America's supremacy has begotten a world that is safer, more stable, or more affluent. There is no coherent first-principles argument that a world led by a militarily dominant United States is inherently more peaceful or prosperous than some possible alternative. There is also a frequently overlooked difference between being the world's greatest military power and being its leader. China, India, Indonesia, Pakistan, Russia, Egypt and Iran – seven countries who together account for nearly half of the planet's population – almost certainly do not see themselves as being led in any meaningful way by the United States. While the US does have great influence in the world, this flows less from its military prowess – employment of which has been frustrated at least as often as it has been successful – than from the strength of its economy, the creativity of its people and the example it provides of an enduring, pluralistic democracy. Each of these is threatened by an overbearing and excessively militarised approach to the world. There can likewise be little doubt that the United States’ recent security policy has undermined the nation's claim to moral leadership. Abu Ghraib, ‘extraordinary rendition’, the wildly unpopular invasion of Iraq, the use of torture in the ‘war on terror’, the noxious surveillance state revealed by recent leaks and the controversy surrounding Washington's lethal use of drones will long haunt America's reputation. It should be remembered, meanwhile, that threats to the Department of Defense (DoD)’s institutional interests are not the same as threats to American security. If US global ‘leadership’ is a commodity of questionable value, and military pre-eminence of questionable utility in attaining it, the argument for maintaining superiority indefinitely must hinge on the number and severity of threats the nation confronts.10 And, indeed, a wide array of such challenges are frequently cited as justifying – even demanding – dominance. The 2012 defence guidance, for example, warns of ‘violent extremists’ with ‘the potential to pose catastrophic threats that could directly affect our security and prosperity’.11 The catastrophic dangers are not specified; it is simply assumed that the reader will accept their existence. Threats to the so-called ‘global commons’ – the maritime, electronic and orbital lines of communication through which the world's trade and finances flow – are also cited as major dangers, although again, who is endangering them, to what extent and to what ends is not publicly explained.12 Current planning should not necessarily be the baseline for future strategy. There is an implicit but foundational assumption behind much of the discussion about the DoD's future: that the status quo is the standard against which all changes should be measured and, for the most part, resisted. This thinking is akin to looking outside during a thunderstorm and concluding that everyone should always keep their umbrellas open. Today's military is the product of an aberration The long-term status quo, from the republic's founding to the Second World War, was to field minimal armed forces, except in times of emergency. Even the more recent narrative, from the end of the Cold War to the events of 11 September 2001 – which, by the way, a larger, more powerful military could not have prevented – is one of reductions in size and budgets. Today's military is, again, the product of an aberration – a pro-found deviation from the nation's traditional approach to addressing its security concerns. The first step toward properly shaping the military the nation needs for the future is, in fact, to return to the old normal. In November 2011, all four then-service chiefs testified before Congress on the potential consequences of sequestration. Air Force General Norton Schwartz said that ‘dire consequences’ would ensue if the Pentagon were asked to absorb budget cuts ‘far beyond’ those envisioned by the Budget Control Act.13 Admiral Jonathan Greenert warned of ‘severe and irreversible’ damage to the navy resulting from budget cuts.14 General James Amos cautioned against ‘significant risk’ arising from cuts in Marine Corps end strength, while Army Chief of Staff General Ray Odierno said that further cuts would be ‘catastrophic to the military’ and subject the nation to ‘an unacceptable level of strategic and operational risk’.15 The latter argument in particular confuses the interests of the armed forces and the Department of Defense with those of the nation. A chain of logic, analysis and argument must be articulated to legitimately connect reductions in defence spending with ‘dire consequences’ for American security. Those links have not been forged. Instead – and whatever the good intentions of those involved – the Pentagon has developed a set of practices that are heavily biased toward maintaining the status quo. The services, inevitably seeking, among other things, to protect their budgets and force structures, dominate the process by which a set of scenarios and analytic approaches are created. These are then used to derive requirements for those same force structures and budgets. It cannot be surprising that such a circular approach does little to produce new and innovative thinking. The United States remains, in essence, a continental power buffered by two oceans that, while not as functionally large as they once were, substantially insulate it from the troubles of the rest of the world. This, among other things, means that since 1945 every American war save one has been a war of choice, and the ultimate value of fighting each has been questionable. Stalemate in Korea and defeat in Vietnam did little to materially affect the well-being of the United States as a whole, though the disagreements over the wisdom of the latter tore at the fabric of the country. Victories in Grenada, Panama, Kuwait and Kosovo arguably brought few direct benefits to the United States. The costs in money and blood of the Iraqi and Afghan adventures have already been described; there seems little doubt that the US would have been far better off not fighting the first one at all and prosecuting the second very differently. Some of these conflicts were virtuous attempts to undo unprovoked aggression or rescue threatened populations, and the intangible results in terms of stability and humanitarianism may have made them worthwhile. But that does nothing to alter the fact that of these wars, from Korea through Iraq, only one – the first phase of the Afghan conflict – was waged in response to a direct threat to the safety and security of the American people. The others were optional. One of the responsibilities of strategy is to place limits on ambition, which means above all seeking to distinguish the things that one cannot tolerate from those one would prefer not to happen. Happily free by virtue of geography from the danger of invasion, the sole national-security absolute for the United States is the requirement to prevent, with the highest possible degree of confidence, a nuclear attack on the homeland by a wellarmed state adversary. No other contingency, including a nuclear attack with a single terrorist weapon or one or two crude intercontinental ballistic missiles (ICBMs), presents a truly existential threat. Maintaining a robust deterrent against this catastrophe – absent reductions in global nuclear arsenals sufficient to make the danger disappear – is and must remain the primary mission of US armed forces.

#### Pursuit of hegemony causes counterbalancing — pushes Russia and China into a military alliance.

**Hawn, 18** — Jeff Hawn; Analyst at Stratfor, a geopolitical intelligence and advisory firm. (12-10-2018, "China, Russia and the formation of an 'Eastern Entente;'" https://thehill.com/blogs/congress-blog/foreign-policy/420664-china-russia-and-the-formation-of-an-eastern-entente; //GrRv)

Indeed, if one weighs Russia and China’s mutual interest versus their mutual animosities, an argument begins to form that the two Eurasian powers’ **conflict with the West** may be enough to overcome their **history of distrust.**

First, and perhaps most important is that neither power poses an **existential threat** to the other. Russia is not looking to **convert China** to its **government system** and the same goes for China. Any competition between the two states is framed in the realist sense of great power competition over land and resources. **The West meanwhile actively espouses its own democratic system as a superior form of government, and has spent the last three quarters of a century trying to spread its ideals across the world.**

Secondly, there is the issue of territorial integrity. While it is true that Russia and China share a massive land border, that border sits at the far frontier of both nations. **In contrast**, both China and Russia have American troops within **easy striking distance** of their centers of power. In Europe, American tanks stationed in the Baltic States sit about 385 miles from Moscow. In the Pacific, the US 7th Fleet is based in Japan in addition to thousands of American troops deployed in Korea. These military assets are well within striking distance of China’s seaboard, the heart of its economy, and home to the majority of its population. Both **Russia and China view the U.S. and its allies as attempting to constrain their respective efforts to secure regions of strategic significance for them.**

China and Russia’s similarities **do not end there**. Both nations are former imperial powers that see themselves as the **victims** over **extended periods of national humiliation** forced on them by the **Western powers**. **When that is taken into consideration, the two nations’ desire to cooperate begins to makes sense.**

So what do Russia and China have to gain from increased cooperation? Is their ultimate goal dominion over the United States, as some alarmists would have us believe? I do not believe so. Both states are the heirs to the most brutal school of realpolitik. **Their goal in cooperating is to offset the U.S. global hegemony, and carve out spheres of influence that will boost their own security and economic growth.**

Neither nation will benefit from a complete U.S. retreat form the world stage, but **both have much to gain if they can challenge U.S. supremacy.** Indeed, there remain **strong points of contention** between Russia and China, especially the Central Asian states in Russia’s traditional backyard, which China has increasingly been playing in as part of its One Belt One Road initiative. However, it can be argued that in Central Asia we are seeing the most tangible result of Chinese and Russia entente. Both can benefit from the region’s development, while security and counter terrorism cooperation help to prop up friendly regimes, and keep the lid on potential jihadist threats a serious concern for both states.

**There are already strong signs that China and Russia are seeing the benefits of working together. The two nations militaries frequently hold joint exercises,** most notably Vostok 2018 when 3,500 Chinese troops participated in the exercises. Economic investment has lagged behind, but both China and Russia have recently signaled a desire to boost the economic heft of their shared border region. The nascent Russian-Chinese Business Advisory Committee announced in September 2018 an ambitious goal of a cumulative $100 billion joint investment and development projects.

There certainly will be tension between the two states. Vostok was marred by reports of Russian naval vessels being followed by a Chinese spy ship, and Russian state media printed several critical articles of the Chinese J-15, which is derived from Soviet technology purchased from Ukraine. These spats should not distract from the broader trend that is unfolding, both nations’ security dilemmas on their respective eastern and western flanks. Dilemmas made more pressing by U.S. sanctions and tariffs. The ability to, if not trust their neighbor, at least trust that for the moment their interests are aligned has helped the China- Russia entente build momentum.

**As the U.S. and Western animosity grows toward Russia and China, it will continue to push them to closer cooperation, and make rending their partnership far more difficult**. Between 1972 and 1990, U.S. grand strategy called for **counterbalancing** these two powers. At the time both states had more to gain through engagement with the U.S. than they did with each other. Over the last two decades, **that has reversed substantially.** So perhaps the question should not be if China and Russia would form an alliance, but whether or not they **already have, and how strong it can grow?**

#### A Russia-China coalition causes extinction — cyber-attacks, Russian aggression, and Chinese expansionism.

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While Washington takes a wait-and-see approach, **Moscow** and **Beijing** could be **coordinat**ing to **significantly thwart U.S. interests** over the next 15 to 25 years. The two powers may never forge a formal military alliance, but they could still work together in ways that cause major headaches for the United States. Imagine, for example, that Russia and China coordinate the **timing** of **hostile actions on their peripheries**. If China made **aggressive moves** in support of its sovereignty claim in the **South China Sea** at the same time that **Russia** made **further incursions into Ukraine**, U.S. forces would **struggle** to **respond effectively** to **either** gambit.

**Nonmilitary collaboration** between Russia and China could **weaken the United States** and even **threaten its way of life**. Both countries are likely to use their **cyber** and **disinformation capabilities** to, as the director of national intelligence put it in January, “**steal information**, to **influence our citizens**, or to **disrupt critical infrastructure**.” China currently does not exhibit Russia’s zeal for using such measures, particularly against the United States; but if U.S.-Chinese relations darken, Beijing could plausibly take a **page** from **Russia’s playbook** and mount **coordinated, deniable cyberattacks** or **interference campaigns** against the United States.

China and Russia behave very differently in pursuit of their foreign policy objectives, but the combined effect of their actions is often greater than the sum of its parts. In Europe, for example, China has amassed **economic influence** through growing trade relationships and **Belt and Road-related infrastructure investments** not contingent on standards for democratic governance and human rights, particularly in eastern Europe, Greece, and Italy. This engagement will ultimately **translate** into **political leverage,** as it already has in many countries in Asia. Russia, for its part, appears intent on pursuing hybrid tactics that **disrupt democratic processes**. On their own, each of these activities is already worrisome for the United States and Europe. But a scenario in which each country’s actions **amplify the other’s** is **not hard to imagine**. China, for example, could eventually use its **growing ownership of European ports** and **rail lines** to **slow a NATO response** to **Russian aggression**. Likewise, Beijing could use the economic leverage it has accrued to quietly dissuade an already reluctant NATO member state such as Hungary or Turkey from responding to Russia’s hybrid tactics, which could ultimately serve to **discredit NATO’s commitment** to **collective defense.**

### A2 Competitiveness

#### Competitiveness not key to heg

**Wohlforth et al., Dartmouth government professor, 2008**

(William, World out of Balance, International Relations and the Challenge of American Primacy, pg 32-5, ldg)

American primacy is also rooted in the county's position as the world's leading technological power. The United States remains dominant globally in overall R&D investments, high-technology production, commercial innovation, and higher education (table 2.3). Despite the weight of this evidence, elite perceptions of U.S. power had shifted toward pessimism by the middle of the first decade of this century. As we noted in chapter 1, this was partly the result of an Iraq-induced doubt about the utility of material predominance, a doubt redolent of the post-Vietnam mood. In retrospect, many assessments of U.S. economic and technological prowess from the 1990s were overly optimistic; by the next decade important potential vulnerabilities were evident. In particular, chronically imbalanced domestic finances and accelerating public debt convinced some analysts that the United States once again confronted a competitiveness crisis.23 If concerns continue to mount, this will count as the fourth such crisis since 1945; the first three occurred during the 1950s (Sputnik), the 1970s (Vietnam and stagflation), and the 1980s (the Soviet threat and Japan's challenge). None of these crises, however, shifted the international system's structure: multipolarity did not return in the 1960s, 1970s, or early 1990s, and each scare over competitiveness ended with the American position of primacy retained or strengthened.24 Our review of the evidence of U.S. predominance is not meant to suggest that the United States lacks vulnerabilities or causes for concern. In fact, it confronts a number of significant vulnerabilities; of course, this is also true of the other major powers.25 The point is that adverse trends for the United States will not cause a polarity shift in the near future. If we take a long view of U.S. competitiveness and the prospects for relative declines in economic and technological dominance, one takeaway stands out: relative power shifts slowly. The United States has accounted for a quarter to a third of global output for over a century. No other economy will match its combination of wealth, size, technological capacity, and productivity in the foreseeable future (tables 2.2 and 2.3). The depth, scale, and projected longevity of the U.S. lead in each critical dimension of power are noteworthy. But what truly distinguishes the current distribution of capabilities is American dominance in all of them simultaneously. The chief lesson of Kennedy's 500-year survey of leading powers is that nothing remotely similar ever occurred in the historical experience that informs modern international relations theory. The implication is both simple and underappreciated: the counterbalancing constraint is inoperative and will remain so until the distribution of capabilities changes fundamentally. The next section explains why.

#### No heg impact

G. John **Ikenberry 18**, professor of Politics and International Affairs in the Woodrow Wilson School of Public and International Affairs at Princeton University, “Why the Liberal World Order Will Survive”, Carnegie Ethics and International Affairs, <https://scholar.princeton.edu/sites/default/files/gji3/files/why_the_liberal_world_order_will_survive.pdf>

In this essay I look at the evolving encounters between rising states and the post-war Western international order. My starting point is the classic “power transition” perspective. Power transition theories see a tight link between international order—its emergence, stability, and decline—and the rise and fall of great powers. It is a perspective that sees history as a sequence of cycles in which powerful or hegemonic states rise up and build order and dominate the global system until their power declines, leading to a new cycle of crisis and order building. In contrast, I offer a more evolutionary perspective, emphasizing the lineages and continuities in modern international order. More specifically, I argue that although America’s hegemonic position may be declining, **the liberal international characteristics of order—openness, rules, multilateral cooperation—are deeply rooted and likely to persist.** This is true ev**en though the orientation and actions of the Trump administration** have raised serious questions about the U.S. commitment to liberal internationalism. Just as importantly, rising states (led by **China**) **are not engaged in a frontal attack** on the American-led order. While struggles do exist over orientations, agendas, and leadership, **the non-Western developing countries remain tied** to the architecture and principles of a liberal-oriented global order. And even as China seeks in various ways to build rival regional institutions, **there are stubborn limits on what it can do.** Power Transitions and International Order There is wide agreement that the world is witnessing a long-term global power transition. Wealth and power is diffusing, spreading outward and away from Europe and the United States. The rapid growth that marked the non-Western rising states in the last decade may have ended, and even China’s rapid economic ascendency has slowed. But the overall pattern of change remains: the “rest” are gaining ground on the “West.” While there is wide agreement that the world is witnessing a global power transition, there is less agreement on the consequences of power shifts for international order. The classic view is advanced by realist scholars, such as E. H. Carr, Robert Gilpin, Paul Kennedy, and William Wohlforth, who make sweeping arguments about power and order. These hegemonic realists argue that international order is a by-product of the concentration of power. Order is created by a powerful state, and when that state declines and power diffuses, international order weakens or breaks apart. Out of these dynamic circumstances, a rising state emerges as the new dominant state, and it seeks to reorganize the international system to suit its own purposes. In this view, world politics from ancient times to the modern era can be seen as a series of repeated cycles of rise and decline. War, protectionism, depression, political upheaval—various sorts of crises and disruptions may push the cycle forward. This narrative of hegemonic rise and decline draws on the European and, more broadly, Western experience. Since the early modern era, Europe has been organized and reorganized by a succession of leading states and would-be hegemons: the Spanish Hapsburgs, France of Louis XIV and Napoleon, and post-Bismarck Germany. The logic of hegemonic order comes even more clearly into view with Pax Britannica, the nineteenth-century hegemonic order based on British naval and mercantile dominance. The decline of Britain was followed by decades of war and economic instability, which ended only with the rise of Pax Americana. For hegemonic realists, the debate today is about where the world is along this cyclical pathway of rise and decline. Has the United States finally lost the ability or willingness to underwrite and lead the post-war order? Are we in the midst of a hegemonic crisis and the breakdown of the old order? And are rising states, led by China, beginning to step forward in efforts to establish their own hegemonic dominance of their regions and the world? These are the lurking questions of the power transition perspective. **But does this vision of power transition truly illuminate the struggles going on today over international order?** Some might argue no—that the United States is still in a position, despite its travails, to provide hegemonic leadership. Here one would note that there is a durable infrastructure (or what Susan Strange has called “structural power”) that undergirds the existing American-led order. Far-flung security alliances, market relations, liberal democratic solidarity, deeply rooted geopolitical alignments—there are many possible sources of American hegemonic power that remain intact. **But there may be even deeper sources of continuity in the existing system.** This would be true if the existence of a liberal-oriented international order does not in fact require hegemonic domination. It might be that the **power transition theory is wrong: the stability and persistence of the existing post-war international order does not depend on the concentration of American power.** In fact, international order is not simply an artifact of concentrations of power. The **rules and institutions that make up international order have a more complex and contingent relationship with the rise and fall of state power**. This is true in two respects. First, international order itself is complex: multilayered, multifaceted, and not simply a political formation imposed by the leading state. International order is not “one thing” that states either join or resist. It is an aggregation of various sorts of ordering rules and institutions. **There are the deep rules and norms of sovereignty. There are governing institutions**, starting with the United Nations. **There is a sprawling array of international institutions, regimes, treaties, agreements, protocols, and so forth**. These governing arrangements cut across diverse realms, including security and arms control, the world economy, the environment and global commons, human rights, and political relations. Some of these domains of governance may have rules and institutions that narrowly reflect the interests of the hegemonic state, but most reflect negotiated outcomes based on a much broader set of interests. As rising states continue to rise, they do not simply confront an American-led order; they face a wider conglomeration of ordering rules, institutions, and arrangements; many of which they have long embraced**. By separating “American hegemony” from “the existing international order,” we can see a more complex set of relationships.** The United States **does not embody the international order;** it has a relationship with it, as do rising states. The United States embraces many of the core global rules and institutions, such as the United Nations, International Monetary Fund (IMF), World Bank, and World Trade Organization. But it also has resisted ratification of the Law of the Sea Convention and the Convention on the Rights of the Child (it being the only country not to have ratified the latter) as well as various arms control and disarmament agreements. China also embraces many of the same global rules and institutions, and resists ratification of others. Generally speaking, the more fundamental or core the norms and institutions are—beginning with the Westphalian norms of sovereignty and the United Nations system—the more agreement there is between the United States and China as well as other states. Disagreements are most salient where human rights and political principles are in play, such as in the Responsibility to Protect. Second, there is also diversity in what rising states “want” from the international order. The struggles over international order take many different forms. In some instances, what rising states want is more influence and control of territory and geopolitical space beyond their borders. One can see this in China’s efforts to expand its maritime and political influence in the South China Sea and other neighboring areas. This is an age-old type of struggle captured in realist accounts of security competition and geopolitical rivalry. Another type of struggle is over the norms and values that are enshrined in global governance rules and institutions. These may be about how open and rule-based the system should be. They may also be about the way human rights and political principles are defined and brought to bear in relations among states. Finally, the struggles over international order may be focused on the distribution of authority. That is, rising states may seek a greater role in the governance of existing institutions. This is a struggle over the position of states within the global political hierarchy: voting shares, leadership rights, and authority relations. These observations cut against the realist hegemonic perspective and cyclical theories of power transition. **Rising states do not confront a single, coherent, hegemonic order.** The international order offers a buffet of options and choices. They can embrace some rules and institutions and not others. Moreover, stepping back, the international orders that rising states have faced in different historical eras have not all been the same order. The British-led order that Germany faced at the turn of the twentieth century is different from the international order that China faces today. The contemporary international order is much more complex and wide-ranging than past orders. **It has a much denser array of rules, institutions, and governance realms**. There are also both regional and global domains of governance. **This makes it hard to imagine an epic moment when the international order goes into crisis and rising states step forward—either China alone or rising states as a bloc—to reorganize and reshape its rules and institutions**. Rather than a cyclical dynamic of rise and decline, change in the existing American-led order might best be captured by terms such as continuity, evolution, adaptation, and negotiation. **The struggles over international order today are growing, but it is not a drama best told in terms of the rise and decline of American hegemony.**

#### American military dominance isn’t necessary for global stability.

Christopher J. **Fettweis** **17**. Associate professor of political science, Tulane. “Unipolarity, Hegemony, and the New Peace.” Security Studies, 26:3, 423-451.

These assessments of conflict are by necessity relative, because there has not been a “high” level of conflict in any region outside the Middle East during the period of the New Peace. Putting aside for the moment that important caveat, some points become clear. The great powers of the world are clustered in the upper right quadrant, where US intervention has been high, but conflict levels low. US intervention is imperfectly correlated with stability, however. Indeed, it is conceivable that the relatively high level of US interest and activity has made the security situation in the Persian Gulf and broader Middle East **worse**. In recent years, substantial hard power investments (Somalia, Afghanistan, Iraq), moderate intervention (Libya), and reliance on diplomacy (Syria) have been equally **ineffective** in stabilizing states torn by conflict. While it is possible that the region is essentially unpacifiable and no amount of police work would bring peace to its people, it remains hard to make the case that the US presence has improved matters. In this “strong point,” at least, US hegemony has **failed to bring peace**.

In much of the rest of the world, the United States has not been especially eager to enforce any particular rules. Even rather incontrovertible evidence of genocide has not been enough to inspire action. Washington’s intervention choices have at best been erratic; Libya and Kosovo brought about action, but much more blood flowed uninterrupted in Rwanda, Darfur, Congo, Sri Lanka, and Syria. The US record of peacemaking is not exactly a long uninterrupted string of successes. During the turn-of-the-century conventional war between Ethiopia and Eritrea, a highlevel US delegation containing former and future National Security Advisors (Anthony Lake and Susan Rice) made a half-dozen trips to the region, but was unable to prevent either the outbreak or recurrence of the conflict. Lake and his team shuttled back and forth between the capitals with some frequency, and President Clinton made repeated phone calls to the leaders of the respective countries, offering to hold peace talks in the United States, all to no avail.67 The war ended in late 2000 when Ethiopia essentially won, and it controls the disputed territory to this day.

The Horn of Africa is hardly the only region where states are free to fight one another today without fear of serious US involvement. Since they are choosing not to do so with increasing frequency, something else is probably affecting their calculations. Stability exists even in those places where the potential for intervention by the sheriff is minimal. Hegemonic stability can only take credit for influencing those decisions that would have ended in war without the presence, whether physical or psychological, of the United States. It seems hard to make the case that the relative peace that has descended on so many regions is primarily due to the kind of heavy hand of the neoconservative leviathan, or its lighter, more liberal cousin. Something else appears to be at work.

Conflict and US Military Spending

How does one measure polarity? Power is traditionally considered to be some combination of military and economic strength, but despite scores of efforts, no widely accepted formula exists. Perhaps overall military spending might be thought of as a proxy for hard power capabilities; perhaps too the amount of money the United States devotes to hard power is a reflection of the strength of the unipole. When compared to conflict levels, however, there is no obvious correlation, and certainly not the kind of negative relationship between US spending and conflict that many hegemonic stability theorists would expect to see.

During the 1990s, the United States cut back on defense by about 25 percent, spending $100 billion less in real terms in 1998 that it did in 1990.68 To those believers in the neoconservative version of hegemonic stability, this irresponsible “peace dividend” endangered both national and global security. “No serious analyst of American military capabilities doubts that the defense budget has been cut much too far to meet America’s responsibilities to itself and to world peace,” argued Kristol and Kagan at the time.69 The world grew dramatically more peaceful while the United States cut its forces, however, and stayed just as peaceful while spending rebounded after the 9/11 terrorist attacks. The incidence and magnitude of global conflict **declined while the military budget was cut** under President Clinton, in other words, and kept declining (though more slowly, since levels were already low) as the Bush administration ramped it back up. Overall US military spending has varied during the period of the New Peace from a low in constant dollars of less than $400 billion to a high of more than $700 billion, but war does not seem to have noticed. The same nonrelationship exists between other potential proxy measurements for hegemony and conflict: there does not seem to be much connection between warfare and fluctuations in US GDP, **alliance commitments**, and forward **military presence**. There was very little fighting in Europe when there were 300,000 US troops stationed there, for example, and that **has not changed** as the number of Americans **dwindled by 90 percent**. Overall, there **does not** seem to be much correlation between US actions and systemic stability. Nothing the United States actually does seems to matter to the New Peace.

It is possible that absolute military spending might not be as important to explain the phenomenon as relative. Although Washington cut back on spending during the 1990s, its relative advantage never wavered. The United States has accounted for between 35 and 41 percent of global military spending every year since the collapse of the Soviet Union.70 The perception of relative US power might be the decisive factor in decisions made in other capitals. One cannot rule out the possibility that it is the perception of US power—and its willingness to use it—that keeps the peace. In other words, perhaps it is the grand strategy of the United States, rather than its absolute capability, that is decisive in maintaining stability. It is that to which we now turn.

Conflict and US Grand Strategy

The perception of US power, and the strength of its hegemony, is to some degree a function of grand strategy. If indeed US strategic choices are responsible for the New Peace, then variation in those choices ought to have consequences for the level of international conflict. A restrained United States is much less likely to play the role of sheriff than one following a more activist approach. Were the unipole to follow such a path, hegemonic-stability theorists warn, disaster would follow. Former National Security Advisor Zbigniew Brzezinski spoke for many when he warned that “outright chaos” could be expected to follow a loss of hegemony, including a string of quite specific issues, including new or renewed attempts to build regional empires (by China, Turkey, Russia, and Brazil) and the collapse of the US relationship with Mexico, as emboldened nationalists south of the border reassert 150-year-old territorial claims. Overall, without US dominance, today’s relatively peaceful world would turn “violent and bloodthirsty.” 71 Niall Ferguson foresees a post-hegemonic “Dark Age” in which “plunderers and pirates” target the big coastal cities like New York and Rotterdam, terrorists attack cruise liners and aircraft carriers alike, and the “wretchedly poor citizens” of Latin America are unable to resist the Protestantism brought to them by US evangelicals. Following the multiple (regional, fortunately) nuclear wars and plagues, the few remaining airlines would be forced to suspend service to all but the very richest cities.72 These are somewhat extreme versions of a central assumption of all hegemonic-stability theorists: a restrained United States would be accompanied by utter disaster. The “present danger” of which Kristol, Kagan, and their fellow travelers warn is that the United States “will shrink its responsibilities and—in a fit of absentmindedness, or parsimony, or indifference— allow the international order that it created and sustains to collapse.” 73

Liberals fear restraint as well, and also warn that a militarized version of primacy would be counterproductive in the long run. Although they believe that the rule-based order established by United States is more durable than the relatively fragile order discussed by the neoconservatives, liberals argue that Washington can undermine its creation over time through thoughtless unilateral actions that violate those rules. Many predicted that the invasion of Iraq and its general contempt for international institutions and law would call the legitimacy of the order into question. G. John Ikenberry worried that Bush’s “geostrategic wrecking ball” would lead to a more hostile, divided, and dangerous world.74 Thus while all hegemonicstability theorists expect a rise of chaos during a restrained presidency, liberals also have grave concerns regarding primacy.

Overall, if either version is correct and global stability is provided by US hegemony, then maintaining that stability through a grand strategy based on either primacy (to neoconservatives) or “deep engagement” (to liberals) is clearly a wise choice.75 If, however, US actions are only tangentially related to the outbreak of the New Peace, or if any of the other proposed explanations are decisive, then the United States can retrench without fear of negative consequences. The grand strategy of the United States is therefore crucial to beliefs in hegemonic stability.

Although few observers would agree on the details, most would probably acknowledge that post-Cold War grand strategies of American presidents have differed in some important ways. The four administrations are reasonable representations of the four ideal types outlined by Barry R. Posen and Andrew L. Ross in 1996.76 Under George H. W. Bush, the United States followed the path of “selective engagement,” which is sometimes referred to as “balance-of-power realism”; Bill Clinton’s grand strategy looks a great deal like what Posen and Ross call “cooperative security,” and others call “liberal internationalism”; George W. Bush, especially in his first term, forged a strategy that was as close to “primacy” as any president is likely to get; and Barack Obama, despite some early flirtation with liberalism, has followed a restrained realist path, which Posen and Ross label “neo-isolationism” but its proponents refer to as “strategic restraint.” 77 In no case did the various anticipated disorders materialize. As Table 2 demonstrates, armed conflict levels fell steadily, irrespective of the grand strategic path Washington chose.

Neither the primacy of George W. Bush nor the restraint of Barack Obama had much effect on the level of global violence. Despite continued warnings (and the high-profile mess in Syria), the world has not experienced an increase in violence while the United States chose uninvolvement. If the grand strategy of the United States is responsible for the New Peace, it is leaving no trace in the evidence.

Perhaps we should not expect a correlation to show up in this kind of analysis. While US behavior might have varied in the margins during this period, nether its relative advantage over its nearest rivals nor its commitments waivered in any important way. However, it is surely worth noting that if trends opposite to those discussed in the previous two sections had unfolded, if other states had reacted differently to fluctuations in either US military spending or grand strategy, then surely hegemonic stability theorists would argue that their expectations had been fulfilled. Many liberals were on the lookout for chaos while George W. Bush was in the White House, just as neoconservatives have been quick to identify apparent worldwide catastrophe under President Obama.78 If increases in violence would have been evidence for the wisdom of hegemonic strategies, then logical consistency demands that the lack thereof should at least pose a problem

As it stands, the only evidence we have regarding the relationship between US power and international stability suggests that the two are unrelated. The rest of the world appears quite capable and willing to operate effectively without the presence of a global policeman. Those who think otherwise have precious little empirical support upon which to build their case. Hegemonic stability is a belief, in other words, rather than an established fact, and as such deserves a different kind of examination.

The Political Psychology of Unipolarity

Evidence supporting the notion that US power is primarily responsible for the New Peace is **slim**, but belief in the connection is quite strong, especially in policy circles. The best arena to examine the proposition is therefore not the world of measurable rationality, but rather that of the human mind. Political psychology can shed more light on unipolarity than can any collection of data or evidence. Just because an outcome is primarily psychological does not mean that it is less real; perception quickly becomes reality for both the unipolar state and those in the periphery. If all actors believe that the United States provides security and stability for the system, then behavior can be affected. Beliefs have deep explanatory power in international politics whether they have a firm foundation in empirical reality or not.

Like all beliefs, faith in the stability provided by hegemony is rarely subjected to much analysis. In their simplest form, beliefs are ideas that have become internalized and accepted as true, often without much further analysis Although they almost always have some basis in reality, beliefs need not pass rigorous tests to prove that they match it. No amount of evidence has been able to convince some people that vaccines do not cause autism, for example, or that the world is more peaceful than at any time before, or that the climate is changing due to human activity. Ultimately, as Robert Jervis explains, “we often believe as much in the face of evidence as because of it.”

When leaders are motivated to act based on unjustified, inaccurate beliefs, folly often follows. The person who decides to take a big risk because of astrological advice in the morning's horoscope can benefit from baseless superstition if the risk pays off. Probability and luck suggest that successful policy choices can sometimes flow from incorrect beliefs. Far more often, however, poor intellectual foundations lead to suboptimal or even disastrous outcomes. It is worthwhile to analyze the foundations of even our most deeply held beliefs to determine which ones are good candidates to inspire poor policy choices in those who hold them.

People are wonderful rationalizers. There is much to be said for being the strongest country in the world; their status provides Americans both security and psychological rewards, as well as strong incentives to construct a rationale for preserving the unipolar moment that goes beyond mere selfishness. Since people enjoy being “number one,” they are susceptible to perceiving reality in ways that brings the data in line with their desires. It is no coincidence that most hegemonic stability theorists are American. Of the few hegemonic-stability theorists from elsewhere, most hail from the United Kingdom and counsel the United States to follow the lead of the British Empire. Perhaps the satisfaction that comes with being the unipolar power has inspired Americans to misperceive the positive role that their status plays in the world.

Three findings from political psychology can shed light on perceptions of hegemonic stability. They are mutually supportive, and, when taken together, suggest that it is likely that US policymakers overestimate the extent to which their actions are responsible for the choices of others. The belief in the major US contribution to world peace is probably unjustified.

The Illusion of Control

Could 5 percent of the world’s population hope to enforce rules upon the rest? Would even an internationally hegemonic United States be capable of producing the New Peace? Perhaps, but it also may be true that believers in hegemonic stability may be affected by the very common tendency of people to overestimate their ability to control events. A variety of evidence has accumulated over the past forty years to support Ellen J. Langer’s original observations about the “illusion of control” that routinely distorts perception.82 Even in situations where outcomes are clearly generated by pure chance, people tend to believe that they can exert control over events.83 There is little reason to believe that leaders are somehow less susceptible to such illusions than subjects in controlled experiments.

The extensive research on the illusion of control has revealed two further findings that suggest US illusions might be even stronger than average. First, misperceptions of control appear to be correlated with power: individuals with higher socioeconomic status, as well as those who are members of dominant groups, are more likely to overestimate their ability to control events.84 Powerful people tend to be far more confident than others, often overly so, and that confidence leads them to inflate their own importance.85 Leaders of superpowers are thus particularly vulnerable to distorted perceptions regarding their ability to affect the course of events. US observers had a greater structural predisposition than others, for example, to believe that they would have been able to control events in the Persian Gulf following an injection of creative instability in 2003. The skepticism of less powerful allies was easily discounted.

Second, there is reason to believe that culture matters as well as power. People from societies that value individualism are more likely to harbor illusions of control than those from collectivist societies, where assumptions of group agency are more common. When compared to people from other parts of the world, Westerners tend to view the world as “highly subject to personal control,” in the words of Richard Nisbett.86 North Americans appear particularly vulnerable in this regard.87 Those who come from relatively powerful countries with individualistic societies are therefore at high risk for misperceiving their ability to influence events.

For the United States, the illusion of control extends beyond the water’s edge. An oft-discussed public good supposedly conferred by US hegemony is order in those parts of the world uncontrolled by sovereign states, or the “global commons.” 88 One such common area is the sea, where the United States maintains the only true blue-water navy in the world. That the United States has brought this peace to the high seas is a central belief of hegemonic-stability theorists, one rarely examined in any serious way. Indeed the maritime environment has been unusually peaceful for decades; the biggest naval battles since Okinawa took place during the Falklands conflict in 1982, and they were fairly minor.89 If hegemony is the key variable explaining stability at sea, maritime security would have to be far more chaotic without the US Navy.

It is equally if not more plausible to suggest, however, that the reason other states are not building blue-water navies is not because the United States dissuades them from doing so but rather because none feels that trade is imperiled.90 In earlier times, and certainly during the age of mercantilism, zero-sum economics inspired efforts to cut off the trade of opponents on occasion, making control the sea extremely important. Today the free flow of goods is vital to all economies, and it would be in the interest of no state to interrupt it.91 Free trade at sea may no longer need protection, in other words, because it essentially has no enemies; the **sheriff may be patrolling a crime-free neighborhood**. The threat from the few remaining pirates hardly requires a robust naval presence, and is certainly not what hegemonic-stability advocates mean when they compare the role played by the US Navy in 2016 to that of the Royal Navy in 1816. It is at least possible that shared interest in open, free commons keeps the peace at sea rather than the United States. Oceans unpatrolled by the US Navy may be about as stable as they are with the presence of its carriers. The degree to which 273 active-duty ships exert control over vast common parts is not at all clear.

People overestimate the degree to which they control events in their lives. Furthermore, if these observations from political psychology are right about the factors that influence the growth of illusions of power, then US leaders and analysts are particularly susceptible to misperception. They may well be overestimating the degree to which the United States can affect the behavior of others. The rest of the world may be able to **get along just fine**, on land and at sea, without US attempts to control it.

## ! T – US Heg Bad

#### US Heg uses conflict to sustain itself

Monteiro, 12-Nuno P, Associate professor of Political Science at Yale University (“Unrest Assured: Why Unipolarity Is Not Peaceful”, 2012, <https://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00064>, Accessed July 7th 2018) //RR

A unipole carrying out an offensive-dominance strategy wants to revise the status quo in its favor by acquiring more territory, by favorably changing the alignment of other states, or by altering the distribution of power in its own benefit—or some combination of these. Territorial conquest, which is the most ambitious goal of an offensive dominance strategy, is a daunting task in an age of nationalism and is thus likely to be rare.89 Efforts to alter the international alignments of other states or the balance of power can be pursued through soft power and persuasion, but this is unlikely to prove sufficient, and the unipole may decide to use force.90 By putting recalcitrant minor powers in a position of extreme-self help, an offensive-dominance strategy triggers two pathways to conflict. In both cases, a deterrence breakdown leads to a preventive war. Following the first pathway: **the unipole makes revisionist demands that recalcitrant minor powers are unlikely to accept peacefully,** because these pose a threat to their survival. Given its preponderance of power, **the unipole may decide to go to war**. The second causal pathway follows a slightly more complex logic. Like its defensive version, a strategy of offensive dominance provides strong incentives for recalcitrant minor powers to balance internally. These attempts to bolster their relative power, however, are likely to lead to war with the unipole before the recalcitrant power is able to acquire additional capabilities. The reason for this outcome is that the unipole will oppose any attempt by minor powers to revise the status quo in a way that is detrimental to its interests. In addition, wars pitting a recalcitrant minor power against a unipole implementing a strategy of offensive dominance have two effects common to defensive dominance. First, they encourage other recalcitrant minor powers to redouble their balancing efforts. Second, they may make room for wars among major and minor powers.

# Cyberattacks

## Defense

### No Impact

#### No significant impact to cyber attacks – probability, current defense checks, and too difficult to coordinate

Gartzke and Lindsay ’15 [Erik Gartzke is professor of political science at the University of California, San Diego. Jon R. Lindsay is assistant professor of digital media and global affairs at the Munk School of Global Affairs, University of Toronto. Weaving Tangled Webs: Offense, Defense, and Deception in Cyberspace, Security Studies, 24:316–348, 2015.]

Indeed, the US Department of Defense gets attacked ten million times a day; a US university receives a hundred thousand Chinese attacks per day; and one firm measures three thousand distributed denial of service (DDoS) attacks per day worldwide.23 In reality, however, most of these so-called attacks are just routine probes by automated networks of compromised computers (botnets) run by profit-seeking criminals or spy bureaucracies—a far cry from terrorism or military assault. The most alarming scenarios of a “digital Pearl Harbor” or “cyber 9/11” have yet to materialize despite decades of warning. The Stuxnet worm caused limited and temporary disruption of Iran’s nuclear program in the late 2000s, the only known historical case of infrastructure damage via deliberate cyber attack, but this operation seems to reveal more about the strategic limitations of cyber war than its potency.24 The cyber revolution should presumably provide rivals with potent new tools of influence, yet actual cyber disputes from 2001 to 2011 remain restrained and regionalized, not disruptive and global.25 Computer espionage and nuisance cybercrime thrive, to be sure, but they are neither as prevalent nor as costly as they might be, leading skeptics to describe US losses as “a rounding error” in a fifteen trillion dollar economy.26 It is possible in principle that the same tools used for computer-network exploitation may one day be leveraged for more destructive strikes. Yet even if the nontrivial operational challenges of cyber war can be overcome, proponents of the cyber-revolution thesis have yet to articulate convincing strategic motives for why a state or non-state actor might actually use cyber capabilities effectively.27 A considerable shortage of evidence in the study of cyber conflict is thus a source both of concern and relief. That cyber war remains unusual is puzzling in light of the widely held belief that offense is easier than defense in cyberspace. A straightforward implication of the notable scarcity of cyber war would be that, contrary to conventional wisdom, cyberspace is defense dominant for some reason. More carefully stated, since clearly there is much mischief online, offense dominance may exist only for nuisance attacks that are rarely strategically significant, such as piracy, espionage, and “hacktivist” protest, even as the Internet is defense dominant for more harmful or complicated forms of attack. Serious cyber attacks against complicated infrastructure require considerable intelligence preparation, test and evaluation infrastructure, planning capacity, technical expertise, and complementary military or non-cyber intelligence assets.28 If so, it would be a categorical error to mistake the frequency of irritant activity for a more general tendency toward offense dominance across the entire cyber domain.

### No China Attack

#### No china cyber-attacks – public pressure, norms, negotiations, Xi’s reformism – study proves

David E. Sanger, New York Times, 16 - (David E. Sanger, chief Washington correspondent for The New York Times, 6-20-2016, "Chinese Curb Cyberattacks on U.S. Interests, Report Finds", http://www.nytimes.com/2016/06/21/us/politics/china-us-cyber-spying.html, DOA: 8-22-2016) //Snowball

WASHINGTON — Nine months after President Obama and President Xi Jinping of China agreed to a broad crackdown on cyberespionage aimed at curbing the theft of intellectual property, the first detailed study of Chinese hacking has found a sharp drop-off in almost daily raids on Silicon Valley firms, military contractors and other commercial targets. But the study, conducted by the iSight intelligence unit of FireEye, a company that manages large network breaches, also concluded that the drop-off began a year before Mr. Obama and Mr. Xi announced their accord in the White House Rose Garden. In a conclusion that is largely echoed by American intelligence officials, the study said the change is part of Mr. Xi’s broad effort to bring the Chinese military, which is considered one of the main sponsors of the attacks, further under his control. As a result, the same political forces that may be alleviating the theft of data from American companies are also responsible for Mr. Xi’s stunningly swift crackdown on the Chinese media, bloggers and others who could challenge the Communist Party. “It’s a mixed bag,” said Kevin Mandia, the founder of Mandiant, now part of FireEye, which first detailed the activities of a People’s Liberation Army cyber-arm, called Unit 61398, that had been responsible for some of the most highly publicized thefts of American technology. “We still see semiconductor companies and aerospace firms attacked.” But the daily barrage of attacks has diminished, which Mr. Mandia attributed to “public pressure” from, among others, the Justice Department’s decision to indict five members of the P.L.A. unit about a year after its activities were exposed. Today, Unit 61398 appears to be largely out of business, its hackers dispersed to other military, private and intelligence units. Many China scholars and legal experts remain skeptical that the Chinese are deterred by American indictments, since the P.L.A. officers are unlikely to see the inside of an American courtroom. But John P. Carlin, the assistant attorney general for national security, said the report validated his strategy. “The lesson is that when you figure out who has done this kind of theft, don’t fear making it public,” he said. “This is a slow process, but we are beginning to make people realize that even in cyberspace, laws and norms are applicable.”

### No CyberWar

#### No risk of cyber war---disputes empirically deescalate

Dr. Brandon Valeriano 14, Senior Lecturer (Politics), Univ of Glasgow, and Ryan C. Maness, visiting fellow of security and resilience studies in the Department of Political Science at Northeastern University, “The dynamics of cyber conflict between rival antagonists, 2001–11,” Journal of Peace Research May 2014 vol. 51 no. 3 347-360, http://jpr.sagepub.com/content/51/3/347.short

Even considering our past investigators and theory, we were surprised to find little actual evidence of cyber conflict in the modern era. Why then are there so few rivals engaging in cyber warfare? Furthermore, why are the incidents and disputes limited to mostly defacements or denial of service when it seems that cyber capabilities could inflict more damage to their adversaries?¶ Based on our analysis, we find our notion of restraint is a better explanation of cyber interactions than any conception of continuous or escalating cyber conflict. States will not risk war with their cyber capabilities because there are clear consequences to any use of these technologies. States are not reckless, but terrorists and other cyber activists might not be so restrained. The interesting result of the process is that while cyber terrorists will likely proliferate, their ability to do damage will be limited due to the massive resources and conventional intelligence methods needed to make an operation like Stuxnet successful.14 Stuxnet and Flame could be the harbingers of the future, but in reality it was a collusion of discrete events that worked out for the attacker (Lindsay, 2013). With a will to attack, there must also come a way to attack. With such a high burden on luck and ability, it will be rare to see such important disputes continue in the future.¶ The recently discovered cyber incidents of Red October and Flame represent the typical outcome of cyber conflict.15 They are massive cyber operations, but have to date been used for information extraction and espionage purposes. Cyber conflict is in our future, but these events will only be as devastating as the target allows them to be as long as the attacker is restrained by logic, norms, and fear of retaliation. Restraint is clearly in operation for cyber conflict. Constraints can change the behavior of an actor into not doing something it would usually do if left to its own devices. A rival will not blatantly attack its adversary’s infrastructure or secret government databases because that state may perceive the attack as it would a physical attack and respond with an equally devastating cyber incident or even with conventional military forces. There is also the fear of collateral damage which remains high for many actors, and this simple limitation may prevent persistent cyber conflict from becoming a reality. Another fear is cyber blowback, as noted by Farwell & Rohozinski (2011), in that tactics could be replicated and targeted back towards the attacker.¶ The range of relations in the realm of cyberspace has yet to be determined, but it does seem clear that rivals operate as rivals should. They are able to manage their tensions in such a way as to forestall violence yet prolong tensions for long periods of time. Therefore, states have yet to employ widespread damage via cyberspace out of fear of the unknown. They fear the escalation of the rivalry in the absence of a critical event like a territorial invasion. Malicious and damaging cyber tactics seem not to be the norm. The best hope for reducing the possibility of cyber conflict in the future comes from strong institutions capable of managing and restricting cyber-based disputes.

### No Risk

#### Risk is systemically over-estimated and has been for decades

**Healey, Atlantic Council Cyber Statecraft Initiative director, 2013**

(Jason, “No, Cyberwarfare Isn't as Dangerous as Nuclear War”, 3-20, <http://www.usnews.com/opinion/blogs/world-report/2013/03/20/cyber-attacks-not-yet-an-existential-threat-to-the-us>, ldg)

Eighty years ago, the generals of the U.S. Army Air Corps were sure that their bombers would easily topple other countries and cause their populations to panic, claims which did not stand up to reality. A study of the 25-year history of cyber conflict, by the Atlantic Council and Cyber Conflict Studies Association, has shown a similar dynamic where the impact of disruptive cyberattacks has been consistently overestimated. Rather than theorizing about future cyberwars or extrapolating from today's concerns, the history of cyberconflict that have actually been fought, shows that cyber incidents have so far tended to have effects that are either widespread but fleeting or persistent but narrowly focused. No attacks, so far, have been both widespread and persistent . There have been no authenticated cases of anyone dying from a cyber attack. Any widespread disruptions, even the 2007 disruption against Estonia, have been short-lived causing no significant GDP loss.

# Nuke War

## No Nuke War

#### Risk of nuclear war is extremely low – there are barriers and checks against unilateral action, misinterpretation and technical errors

Dealie and Mauroni 15 [Mel, associate professor at the Air Command and Staff College, PhD in American History from UNC-Chapel Hill, and Al, Director of the U.S. Air Force Center for Strategic Deterrence Studies at Maxwell Air Force Base, Alabama, “The Need for Nuclear Alerts,” 5/6/15, War on the Rocks, accessed at: <https://warontherocks.com/2015/05/the-need-for-nuclear-alerts/>] KKL

While nuclear-alerted missiles provide strategic stability, the argument against them continues to rest on deliberate falsehoods. The first involves the false notion of a “hair-trigger.” The second is that a high-alert status opens the door to a nuclear accident or incident. And the third is that high-alert makes it far more likely that a misinterpretation between world leaders or military forces could lead to a nuclear exchange. All three arguments are full of holes. There is no “hair-trigger” alert. The U.S. military has maintained an unblemished safety record for 25 years.\* And constant communications between the United States and Russia dramatically reduce the possibility of such misinterpretations. What Hair-Trigger? One of the arguments presented against alert is that these missiles are on a “hair-trigger” — a term used seven times in the Global Zero report. This gives the impression that missiles stand at the ready and all a launch officer has to do is press some red button and nuclear Armageddon occurs. As Gen. Cartwright understands better than almost anyone, this is utterly ridiculous. First, the president is the only person authorized to order the release of a nuclear weapon. The suggestion that the president has less than a few minutes to make a decision for a full-out strategic response based on a tenuous launch warning is a straw man. There is no demand for the president to make a decision within minutes — if there is any doubt, the decision could be to wait until there is clear evidence prior to any retaliation. Secondly, no one individual can launch a nuclear missile. As with all things in nuclear operations, two people must give consent (aside from, of course, the president) before an action can occur. No one person has knowledge of all nuclear codes; therefore, an insider threat is mitigated. Furthermore, crews are directed by relatively short encrypted messages. While the notion of hacking into the nuclear command and control system would make for a great Hollywood movie, the truth is that all messages go through sophisticated levels of encryption so it would be impossible to duplicate an actual message. While the ICBM force has had some bad press recently, none of the infractions ever compromised the integrity of the launch codes or the nuclear command structure. The Global Zero report states that the risk of the outbreak of nuclear conflict has not decreased proportionally with the significant reductions of nuclear weapons since the height of the Cold War. They insist that a “hair-trigger” alert could result in a nuclear exchange during this period of high acrimony on the international stage. By doing so, they ignore geopolitical context. While tensions between the United States and Russia are undoubtedly higher than we’d like, we are not facing anything approaching the massive competition for global dominance that was the Cold War and the tensions that came along with it. This argument and the others advanced by Global Zero commission reveal their effort as just another excuse for taking nuclear weapon systems offline. The Accident Red Herring Another Global Zero argument for eliminating the ICBMs and returning non-strategic nuclear weapons to the United States is that it would reduce nuclear incidents or accidents. (An accident would be an unexpected error due to a failure of procedures such as an unauthorized launch or the loss of a nuclear weapon. An incident would be an intentional hostile event involving a nuclear weapon, facility, or component.) This is a red herring. There have been 32 known “broken arrows” (accidents involving nuclear weapons) in the history of nuclear operations. The majority of these accidents involved aircraft carrying nuclear weapons, and a majority of those occurred in the 1960s when Strategic Air Command was flying airborne alert. A significant accident happened in 1980 when a dropped wrench socket hit a fuel line that eventually caused a liquid-fueled rocket to explode and jettison the nuclear warhead some 600 feet downrange. Today’s nuclear weapons are much more safe and secure than during the Cold War. The U.S. nuclear arsenal has no liquid-fueled rockets (they are all solid fuel) and no bombers flying on alert loaded with nuclear bombs. Misinterpreting Misinterpretations Finally, those who would de-alert the nuclear force claim that the slightest misinterpretation could lead to a nuclear exchange. History refutes this claim as well. During the Cold War, bomber and reconnaissance aircraft routinely penetrated the airspace of both sides. This was a commonly-accepted practice to test resolve, prod air defenses, and to signal displeasure with current policy or practices. Even today, Russian bombers enter U.S. and European airspace and U.S. reconnaissance planes loiter on the boundaries of Russia. The United States sends its B-2 Spirit bombers to Europe and Southeast Asia to demonstrate political resolve. It did not lead to nuclear war in the past and it will not in the future, because political and military leaders recognize this for what it is — strategic messaging, not acts of war. During the early days of George W. Bush’s administration, a Chinese fighter aircraft ran into a U.S. reconnaissance aircraft forcing it to land on Hainan Island. While this was an international incident between two nuclear-weapon states, it did not lead to nuclear war or even a change in the nuclear posture of both countries. Additionally, previous misinterpretations of launches did not lead to a nuclear exchange because both sides understand the importance of strategic context. Some like to claim a false target on a radar screen, a fly landing on the scope, or some other fanciful scenario might happen that could cause an unauthorized nuclear first strike. The Dr. Strangelove scenario of a Gen. Jack Ripper launching the nuclear fleet on an attack to preserve the United States’ “purity of essence” makes for great entertainment but is hardly based on fact. As noted above, the president is the only person who can authorize a U.S. nuclear release and constant communications between the United States and Russia (through the White House “hot line,” the Nuclear Risk Reduction Center, the State Department, and the United Nations) work to prevent such scenarios.

### No extinction

#### Rigorous climate simulations prove: black carbon quickly rains out, even in worst case scenarios – postdates and indicts their evidence

Reisner 18. Jon Reisner - Climate and atmospheric scientist at the Los Alamos National Laboratory (2-13-2018) AGU, “Climate impact of a regional nuclear weapons exchange: An improved assessment based on detailed source calculations” <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017JD027331> //MK

\*BC = Black Carbon

The no-rubble simulation produces a significantly more intense fire, with more fire spread, and consequently a significantly stronger plume with larger amounts of BC reaching into the upper atmosphere than the simulation with rubble, illustrated in Figure 5. While the no-rubble simulation represents the worst-case scenario involving vigorous fire activity, only a relatively small amount of carbon makes its way into the stratosphere during the course of the simulation. But while small compared to the surface BC mass, stratospheric BC amounts from the current simulations are significantly higher than what would be expected from burning vegetation such as trees (Heilman et al., 2014), e.g., the higher energy density of the building fuels and the initial fluence from the weapon produce an intense response within HIGRAD with initial updrafts of order 100 m/s in the lower troposphere. Or, in comparison to a mass fire, wildfires will burn only a small amount of fuel in the corresponding time period (roughly 10 minutes) that a nuclear weapon fluence can effectively ignite a large area of fuel producing an impressive atmospheric response. Figure 6 shows vertical profiles of BC multiplied by 100 (number of cities involved in the exchange) from the two simulations. The total amount of BC produced is in line with previous estimates (about 3.69 Tg from no-rubble simulation); however, the majority of BC resides below the stratosphere (3.46 Tg below 12 km) and can be readily impacted by scavenging from precipitation either via pyro-cumulonimbus produced by the fire itself (not modeled) or other synoptic weather systems. While the impact on climate of these more realistic profiles will be explored in the next section, it should be mentioned that these estimates are still at the high end, considering the inherent simplifications in the combustion model that lead to overestimating BC production. 3.3 Climate Results Long-term climatic effects critically depend on the initial injection height of the soot, with larger quantities reaching the upper troposphere/lower stratosphere inducing a greater cooling impact because of longer residence times (Robock et al., 2007a). Absorption of solar radiation by the BC aerosol and its subsequent radiative cooling tends to heat the surrounding air, driving an initial upward diffusion of the soot plumes, an effect that depends on the initial aerosol concentrations. Mixing and sedimentation tend to reduce this process, and low altitude emissions are also significantly impacted by precipitation if aging of the BC aerosol occurs on sufficiently rapid timescales. But once at stratospheric altitudes, aerosol dilution via coagulation is hindered by low particulate concentrations (e.g., Robock et al., 2007a) and lofting to much higher altitudes is inhibited by gravitational settling in the low-density air (Stenke et al., 2013), resulting in more stable BC concentrations over long times. Of the initial BC mass released in the atmosphere, most of which is emitted below 9 km, 70% rains out within the first month and 78%, or about 2.9 Tg, is removed within the first two months (Figure 7, solid line), with the remainder (about 0.8 Tg, dashed line) being transported above about 12 km (200 hPa) within the first week. This outcome differs from the findings of, e.g., Stenke et al. (2013, their high BC-load cases) and Mills et al. (2014), who found that most of the BC mass (between 60 and 70%) is lifted in the stratosphere within the first couple of weeks. This can also be seen in Figure 8 (red lines) and in Figure 9, which include results from our calculation with the initial BC distribution from Mills et al. (2014). In that case, only 30% of the initial BC mass rains out in the troposphere during the first two weeks after the exchange, with the remainder rising to the stratosphere. In the study of Mills et al. (2008) this percentage is somewhat smaller, about 20%, and smaller still in the experiments of Robock et al. (2007a) in which the soot is initially emitted in the upper troposphere or higher. In Figure 7, the e-folding timescale for the removal of tropospheric soot, here interpreted as the time required for an initial drop of a factor e, is about one week. This result compares favorably with the “LT” experiment of Robock et al. (2007a), considering 5 Tg of BC released in the lower troposphere, in which 50% of the aerosols are removed within two weeks. By contrast, the initial e-folding timescale for the removal of stratospheric soot in Figure 8 is about 4.2 years (blue solid line), compared to about 8.4 years for the calculation using Mills et al. (2014) initial BC emission (red solid line). The removal timescale from our forced ensemble simulations is close to those obtained by Mills et al. (2008) in their 1 Tg experiment, by Robock et al. (2007a) in their experiment “UT 1 Tg”, and © 2018 American Geophysical Union. All rights reserved. by Stenke et al. (2013) in their experiment “Exp1”, in all of which 1 Tg of soot was emitted in the atmosphere in the aftermath of the exchange. Notably, the e-folding timescale for the decline of the BC mass in Figure 8 (blue solid line) is also close to the value of about 4 years quoted by Pausata et al. (2016) for their long-term “intermediate” scenario. In that scenario, which is also based on 5 Tg of soot initially distributed as in Mills et al. (2014), the factor-of2 shorter residence time of the aerosols is caused by particle growth via coagulation of BC with organic carbon. Figure 9 shows the BC mass-mixing ratio, horizontally averaged over the globe, as a function of atmospheric pressure (height) and time. The BC distributions used in our simulations imply that the upward transport of particles is substantially less efficient compared to the case in which 5 Tg of BC is directly injected into the upper troposphere. The semiannual cycle of lofting and sinking of the aerosols is associated with atmospheric heating and cooling during the solstice in each hemisphere (Robock et al., 2007a). During the first year, the oscillation amplitude in our forced ensemble simulations is particularly large during the summer solstice, compared to that during the winter solstice (see bottom panel of Figure 9), because of the higher soot concentrations in the Northern Hemisphere, as can be seen in Figure 11 (see also left panel of Figure 12). Comparing the top and bottom panels of Figure 9, the BC reaches the highest altitudes during the first year in both cases, but the concentrations at 0.1 hPa in the top panel can be 200 times as large. Qualitatively, the difference can be understood in terms of the air temperature increase caused by BC radiation emission, which is several tens of kelvin degrees in the simulations of Robock et al. (2007a, see their Figure 4), Mills et al. (2008, see their Figure 5), Stenke et al. (2013, see high-load cases in their Figure 4), Mills et al. (2014, see their Figure 7), and Pausata et al. (2016, see one-day emission cases in their Figure 1), due to high BC concentrations, but it amounts to only about 10 K in our forced ensemble simulations, as illustrated in Figure 10. Results similar to those presented in Figure 10 were obtained from the experiment “Exp1” performed by Stenke et al. (2013, see their Figure 4). In that scenario as well, somewhat less that 1 Tg of BC remained in the atmosphere after the initial rainout.

#### Volcanoes disprove - an eruption 5x greater than a nuclear exchange dissipated in 2 years

Walker 18. Robert Walker - software developer and expert on Space and Mars, MHum graduate in Mathematics and Philosophy at The University of York (3/6/2018),  “Debunked: Nuclear Winter and Radioactive Fallout myths” <https://debunkingdoomsday.quora.com/Debunked-Nuclear-Winter-and-Radioactive-Fallout-myths-1> //MK

To quantitatively account for natural and forced variability in the climate system, we created two ensembles, one for the natural, unforced system and a second ensemble using a range of realistic vertical profiles for the BC aerosol forcing, consistent with our detailed fire simulation. The control ensemble was generated using small atmospheric temperature perturbations (Kay et al., 2015). Notably, the overall spread of anomalies in both ensembles is very similar. These ensembles were then used to create “super ensembles” using a statistical emulator, which allows a robust statistical comparison of our simulated results with and without the carbon forcing. Our primary result is the decreased impact on global climate indices, such as global average surface temperature and precipitation, relative to standard scenarios considered in previous work (e.g., Robock et al., 2007a; Stenke et al., 2013; Mills et al., 2014; Pausata et al., 2016). With our finding of substantially less BC aerosol being lofted to stratospheric heights (e.g., over a factor of four less than in most of the scenarios considered by previous studies), these globally averaged anomalies drop to statistically insignificant levels after the first several years (Figures 14 and 16). Our results are generally comparable to those predicted by other studies that considered exchange scenarios in which only about 1 Tg of soot is emitted in the upper troposphere (Robock et al., 2007a; Mills et al., 2008; Stenke et al., 2013). There are more subtle suggestions of regional effects, notably in the extent of the region over which sea surface temperature differences between ensembles remain significant in the final years of simulation (Figure 17). Further work is required to adequately analyze these and other potential regional effects. Historical analysis of several large volcanic eruptions and a recent large fire also supports this result. For example, Timmreck et al. (2010) claim that nonlinear aerosol effects of the Toba Tuff eruption 74,000 years ago helped limit significant global cooling impacts to a two-year time period and that any cooling beyond this time period could be due to other effects. It should be noted that this eruption was estimated to have produced 106 Tg of ash and comparable amounts of other gases, such as sulfur dioxide (SO2), while the estimated amount of soot produced by a regional exchange is on the order of 10 Tg, or 5 orders of magnitude smaller than the ash (not including gases) produced by the Toba eruption. Noting that a nuclear exchange is not identical to volcanic events, it has been asserted that BC particles produced by fires should have a greater impact on absorbing solar radiation than even has the significantly larger amounts of ash and various gases produced by large eruptions (e.g., Robock and Toon 2010). Likewise, recent work in analyzing BC emissions from large fires suggests that in such fires, similar to large volcanic eruptions, coating of soot particles with other particles in convective eddies tends to increase their size and hence increase their subsequent rainout (China et al., 2013) before they can reach the stratosphere. In fact, the recent study of Pausata et al. (2016) found that growth of BC aerosol via coagulation with organic carbon significantly reduce the particles’ lifetime in the atmosphere

## Spark

### NOTE – use ^ impact defense

### NC Shell

#### Isolated civilizations survive nuclear war, but industry is destroyed

Beckstead 15. Nick Beckstead, Professor at Oxford University, Future of Humanity Institute, (2015), “How much could refuges help us recover from a global catastrophe?,” https://sci-hub.se/https://www.sciencedirect.com/science/article/abs/pii/S0016328714001888 //MK

*[‘isolated peoples’ refers to populations unconnected from global society, such as Amazonian tribes]*

A global catastrophe could disrupt global food production for two reasons. First, as noted a few times above, some global catastrophes—such as supervolcanic eruptions, **nuclear wars**, and asteroid collisions—**might** put enough dust in the atmosphere to interfere with photosynthesis and **disrupt global food production.** Second, an initial catastrophe could kill enough people and do enough damage to infrastructure to shut down global food production. Conceivably, stocking refuges with a very large food supply or method of making food—over and above what is necessary to survive the initial catastrophe—might help a small group to survive and recover if a global catastrophe disrupts global food production. A first issue is that a global food crisis **[but] would not** necessarily **result in extinction**. Extinction may even be extremely unlikely in such cases. The closest historical precedent to these crises was the supervolcanic Toba eruption that took places about 74,000 years ago. Many eruptions of this kind have taken place in the last tens of millions of years, but they did not extinguish our pre-human ancestors (Shulman, 2012a). Humans may now be in many ways worse prepared for such a crisis, with a much larger percentage of the population without hunting and agricultural skills, but we have many advantages in terms of technology and coordination. **The 100+ isolated peoples would be** relatively **similar to** pre-human **ancestors who survived supervolcanic eruptions** in the past, though—as noted above—they may have a notable disadvantage in reestablishing an advanced industrial civilization. Second, in any of the global food crisis scenarios noted above, **there would be** a **substantial** amount of remaining **food reserves** in the form of grain stockpiles, livestock, fisheries, foods stored at retailers and private homes, and wild land animals that could be hunted (Shulman, 2012b). Therefore, if a refuge helps humanity survive a global food crisis, the mechanism could not be conceived of as ‘‘adding enough to the global food stock to help with survival.’’ More plausibly, there could be a scenario where there is not enough food for everyone to survive the global food crisis, but there would be enough food for some people to survive if they got a disproportionate share of the food. However, conflict (e.g., as in McCarthy’s postapocalyptic novel The Road) and/or egalitarian pressures could prevent a distribution that would allow at least some of the population to survive the crisis. Conceivably, if the refuge were sufficiently secret, isolated, and well-stocked, it might be the only place where these pressures could be abated, making the people in refuges the sole survivors of the global food crisis. While conceivable and perhaps plausible, refuges’ unique success in this kind of case is not automatic and perhaps unlikely. If some small, well-armed group seizes some grain elevators, refuses to share their bounty, and successfully defends what they have claimed, they could also survive the global food crisis. Alternatively, a single survivalist community might be isolated and well-defended enough to achieve the same purpose. This potential use case may deserve more detailed analysis. As noted above, even if some initial catastrophe failed to kill everyone, it could lead to a collapse of the modern world order. This type of scenario might accompany a global food crisis, or could arise independently in cases of an unprecedentedly bad pandemic or global war that decimates the population. Conceivably, such a collapse to lead to extinction or a failure to recover industrial civilization. In this kind of scenario, people in refuges are not the sole survivors of our hypothetical global catastrophe. Instead, **it seems extremely likely that, some non-negligible fraction of civilization** (greater than 1 in 10,000, say) **would survive. But a greatly reduced global population would be unable to sustain many aspects of modern industry**, manufacturing, trade, and agricultural production, and may be forced to retrace a substantial part of past **technological development** (see Hanson (2008) quotation below).

### ! – Nanotech (bad)

* BIG NOTE – nanobots are arguably LAWs, the aff probably solves this

#### That solves inevitable extinction from violent nanotech---we’re a decade away and nanoparticles and electronics can kill millions – they also self replicate

Louis A. **Del Monte**, 6-3-20**17**, physicist, guest lecturer, author of “Nanoweapons”;  "Are Nanoweapons Paving the Road to Human Extinction?," HuffPost,<https://www.huffpost.com/entry/are-nanoweapons-paving-the-road-to-human-extinction_b_59332a52e4b00573ab57a3fe?guccounter=1> //RS

Nanotechnology researchers continue their relentless journey to develop nanobots and they are succeeding. Nanomedicine is using nanobots to cure to cancer. Military nanotechnologies, especially nanobots, will emerge as the defining weapons of the twenty first century. The United States military already deploys nanoweapons, such as nanotechnology based lasers, toxic nanoparticles, nanoparticle catalysts, and nano electronics. These nanoweapons give the United States significant capabilities in asymmetrical warfare. However, **the US military’s greatest quest is the development of nanobots**, tiny robots built with nanotechnology. What is it about nanobots that make them the ideal weapons? Let us address this question by taking several examples. About a third of all US fighter planes today are drones. Today’s drones are approximately one-third the size of a manned fighter jet, like the F-35. However, a new class of drones is in development, bird and even insect size drones. For example, in 2014, the Army Research Laboratory announced the creation of a “fly drone” weighing only a small fraction of a gram. This drone could conceivable fly into an adversary’s command post and provide surveillance or into the adversary’s dining area to deposit a nano poison. An insect fly drone provides the military with both surveillance and assignation capabilities. This gives a completely new meaning to “fly on the wall.” As electronic processors shrink into the nanoscale, becoming nanoprocessors, about 1/1000 the diameter of a human hair, conceivably they could provide the fly drone with artificial intelligence. In effect, it could autonomously carry out its programmed mission. You may wonder, How does all of this threaten human extinction? To address this question, imagine a scenario where the US military releases millions of artificially intelligent fly drones within an adversary’s borders, programmed to target the populace via commonalities in their DNA. If each fly drone had the capability to assassinate a few people, conceivably they could wipe out an entire nation. Although this may sound like science fiction, **the United States is within a decade of having the capability**. The US Army is already testing a fly drone. As for poisons, **as little as 100 nano grams of botulism H will kill a human**. That quantity of poison is too small to see or taste, yet lethal and small enough for a fly drone to carry. In my book, Nanoweapons: A Growing Threat To Humanity, I classify this type of weapon as a strategic nanoweapon. **This classification parallels strategic nuclear weapons that have the capability to destroy nations**. While artificially intelligent insect drones are already a scary proposition, **the next step in their development is even more frightening, namely self-replicating insect drones, or more generically self- replicating nanobots**. Given the exponential advance in nano electronics and artificial intelligence, characterized by Moore’s law, it is likely we will see the emergence of self-replicating nanobots in the 2050s. Self-replicating nanobots are the ultimate invention. In medicine, they will flow through our blood preventing diseases and curing injuries. In military applications, they will have the capability to completely destroy an adversary, from its populace to its structures. This scenario was depicted in the sci-fi movie, The Day the Earth Stood Still. Strategic nanoweapons, like their nuclear counterparts, pose a threat to humanity. The major issue is control. Will we be able to deploy strategic nanoweapons and maintain control over them? If, for example, we lost control of self-replicating nanobots, we would face a technological plague, one that we currently have no way of stopping. In a decade, we will see the emergence of nanobots. In medicine, they will cure cancer. In warfare, they may kill millions. In the 2050s, we will see the emergence of self-replicating nanobots. In medicine, they will offer immortality. **In warfare, they will pose a threat to humanity.**

#### Nanotech outweighs nuclear war—terrorism, mini-bombs, lethal robots

Jeff **Daniels**, 3-17-20**17**, “Mini-nukes and mosquito-like robot weapons being primed for future warfare,” CNBC,<https://www.cnbc.com/2017/03/17/mini-nukes-and-inspect-bot-weapons-being-primed-for-future-warfare.html> //RS

Several countries are developing nanoweapons that could unleash attacks using mini-nuclear bombs and insect-like lethal robots.  While it may be the stuff of science fiction today**, the advancement of nanotechnology in the coming years will make it a bigger threat to humanity than conventional nuclear weapons**, according to an expert. The U.S., Russia and China are believed to be investing billions on nanoweapons research.  “Nanobots are the real concern about wiping out humanity because they can be weapons of mass destruction,” said Louis Del Monte, a Minnesota-based physicist and futurist. He’s the author of a just released book entitled “Nanoweapons: A Growing Threat To Humanity.”  One unsettling prediction Del Monte’s made is that terrorists could get their hands on nanoweapons as early as the late 2020s through black market sources.  According to Del Monte, nanoweapons are much smaller than a strand of human hair and the insect-like nanobots could be programmed to perform various tasks, including injecting toxins into people or contaminating the water supply of a major city.  Subs: Zika mosquito research 160621 Getty Images Another scenario he suggested the nanodrone could do in the future is fly into a room and drop a poison onto something, such as food, to presumably target a particular individual.  The federal government defines nanotechnology as the science, technology and engineering of things so small they are measured on a nanoscale, or about 1 to 100 nanometers. A single nanometer is about 10 times smaller than the width of a human’s DNA molecule.  While nanotechnology has produced major benefits for medicine, electronics and industrial applications, federal research is currently underway that could ultimately produce nanobots.  For one, the Defense Advanced Research Projects Agency, or DARPA, has a program called the Fast Lightweight Autonomy program for the purpose to allow autonomous drones to enter a building and avoid hitting walls or objects.

### Particle Accelerators

#### That solves inevitable extinction - massive particle colliders are being built which can create black holes and vacuum decay –destroys the universe

Rory **Mckeown** (12-14-20**15**) -Rory McKeown, Journalist for the Daily Star, quoting Wang Yifang, Director of the Institute of High Emergency Physics at the China Academy of Sciences, Stephen Hawking and Sir Martin Rees, President of the Royal Society, Fellow of Trinity College and Emeritus Professor of Cosmology and Astrophysics at the University of Cambridge Dailystar.co.uk, "China to build a gigantic hadron collider that could destroy the UNIVERSE," https://www.dailystar.co.uk/news/latest-news/china-build-gigantic-hadron-collider-17226448 //MK

**Physicists** in the Far East **want to start building a huge particle accelerator** to uncover the unsolved mysteries surrounding the universe. The proposed gigantic machine will **[with] better** Europe’s collider at CERN in Switzerland for both **power and size**. With a staggering circumference of between 30 to 62 miles, it is long enough to circle New York's Manhattan. But **the move could have disastrous consequences for the universe** as we know it – **with its potential to create a black hole or spontaneously combust**. Brit scientist Professor Stephen **Hawking made a bleak claim last year that search for the Higgs boson particle – often referred to as the God particle – could end the world in 10 to 100 years time**. **China is expected to start** building its Frankenstein’s Monster of physics **in 2020**. But conspiracy theorists were quick to point out the date coincides with a prophecy suggesting the arrival of the antichrist. **The Circular Electron Positron Collider (CEPC)** was announced by experts at the China Academy of Sciences and reportedly **will generate millions of Higgs bosons particles – a huge amount more than the Large Hadron Collider**. Wang Yifang, director of the Institute of High Emergency Physics at the academy, said the massive tunnel will hold two super colliders. They want the CEPC to be the first stage of the project, which aims to discover how the Higgs boson particle decays following collision. **China hopes its mean machine will get the closest humanity has ever got to creating the conditions just after the Big Bang.** Wang said the project will generate seven times the energy of Europe’s own collider. He said: “LHC is hitting its limits of energy level. “It seems not possible to escalate the energy dramatically at the existing facility. “The technical route we chose is different from the LHC. “While the LHC smashes together protons, it generates Higgs particles together with many other particles.” He told China Daily the CEPC, which is set to be build near the start of the Great Wall, creates a “clean environment that only produces Higgs boson particles.” “This is a machine for the world and by the world: not a Chinese one", he added. **The second stage of the accelerator – a Super Proton-Proton Collider (SPPC) would begin construction in 2040**. Here scientists could be able to shed light on dark matter, the Big Bang and black holes. And **the process would, according to Sir Martin Rees, Astronomer Royal of the UK, leave the planet “an inert hyperdense sphere about one hundred metres across.” But for all the advancement in science and technology, some fear human intervention into the unknown could wipe out the universe. Prof Hawking described the discovery of the Higgs boson particle in 2012 as a doomsday scenario**. He **warned**: “The Higgs potential has the worrisome feature that it might become metastable at energies above 100 billion gigaelectronvolts. “This could mean that **the universe could undergo catastrophic vacuum decay, with a bubble of the true vacuum expanding the speed of light. “This could happen at any time and we wouldn’t see it coming.”**

### Bunker CP:

#### Counterplan text – Resolved: States ought to invest in civil defense systems globally

#### They prevent extinction from nuclear war.

Charles L. Sanders 17. Scientists for Accurate Radiation Information, PhD in radiobiology, professor in nuclear engineering at Washington State University and the Korea Advanced Institute of Science and Technology. 2017. “Radiological Weapons.” Radiobiology and Radiation Hormesis, Springer, Cham, pp. 13–44. link.springer.com, doi:10.1007/978-3-319-56372-5\_2.

2.5 Survival of Nuclear War The penetrating nature of γ-rays requires substantial shielding with denser materials in high-dose fallout regions. No lethality is expected from a radiation dose rate of 100 mGy/h. An initial dose rate from fallout of 1.0 Gy/h would not be lethal if minimum protection is taken (e.g., staying indoors). An initial dose rate of 10 Gy/h is lethal unless substantially shielded. A shelter providing a protection factor of 100 would suffice. A dose rate of 100 Gy/h would be lethal unless in the best of radiation shelters that give a protection factor of ≥500. However, the area downwind from a nuclear detonation with these high-dose rates would be limited. To protect yourself from fallout, it is essential to find shelter. The dose protection factor of a shelter is the protection afforded someone inside the shelter from radiation originating from the outside. For example, a dose protection factor of 5 means that the radiation level inside the shelter is five times less than the radiation level outside the shelter at the surface of the ground. Dose protection factors vary widely according to building construction, floor level in a multistory building, and proximity to other buildings. A dose protection factor of 5 can be assumed for most woodframe buildings. Most basements provide protection factors of about W50 in at least one area. Building a simple 6-foot trench shelter in your backyard covered with a few feet of dirt on a door would provide protection from thermal and blast effects and a protection factor of 500 from radiation fallout (Table 2.4). Provision of shelters that can withstand 100 psi blast waves, such as subway and utility tunnels, could save nearly 70% of the American urban population from a 9000-MT attack. US ICBM silos are built to withstand up to 2000 psi [60]. Americans are dreadfully ignorant on the subject of civil defense against nuclear war. Americans don’t want to talk about shelters. Most who take shelters seriously are considered on the lunatic survivalist fringe. The current US rudimentary fallout shelter system can only protect a tiny fraction of the population. There are probably less than one in a 100 Americans who would know what to do in the case of nuclear war and even fewer with any contingency plans. The civil defense system should, instead, provide stockpiles of food, water, medical supplies, radiological instruments, and shelters in addition to warning systems, emergency operation and [[TABLE 2.4 OMITTED]] communication systems, and a trained group of radiological monitors and shelter managers. There is a need for real-time radiation measurements in warning the public to seek shelter and prevent panic [61]. Shelters and a warning system providing sufficient time to go to a shelter are the most important elements of civil defense. The purpose of a shelter is to reduce the risks of injury from blast and thermal flux from nearby detonations and from nuclear fallout at distances up to hundreds of miles downwind from nuclear detonations. There are several requirements for an adequate shelter: 1. Availability—Is there space for everyone? 2. Accessibility—Can people reach the shelter in time? 3. Survivability—Can the occupants survive for several days once they are in the shelter? That is, is there adequate food, water, fresh air, sanitation, tools, clothing, blankets, and medical supplies? 4. Protection Factor—Does the shelter provide sufficient protection against radiation fallout? 5. Egress—Is it possible to leave the shelter or will rubble block you? There are several good publications that provide information for surviving nuclear war [62–64]. Two that offer good practical advice are Nuclear War Survival Skills by Kearny [65], and Life after Doomsday by Clayton [66]. Fallout is often visible in the form of ash particles. The ash can be avoided, wiped, or washed off the body or nearby areas. All internal radiation exposure from the air, food, and water can be minimized by proper ventilation and use of stored food and water. Radioactivity in food or water cannot be destroyed by burning, boiling or, using any chemical reactions. Instead it must be avoided by putting distance or mass between it and you. Radioactive ash particles will not induce radioactivity in nearby materials. If your water supply is contaminated with radioactive fallout, most of the radioactivity can be removed simply by allowing time for the ash particles to settle to the bottom and then filtering the top 80% of the water through uncontaminated clay soil which will remove most of the remaining soluble radioactivity.

## Spark

**Nuke war won’t cause extinction, but it’ll spur political will for meaningful disarmament.**

**Deudney 18** [Associate Professor of Political Science at Johns Hopkins University. 03/15/2018. “The Great Debate.” The Oxford Handbook of International Security. www.oxfordhandbooks.com, doi:10.1093/oxfordhb/9780198777854.013.22] // Re-Cut Justin

Although nuclear war is the oldest of these technogenic threats to civilization and human survival, and although important steps to restraint, particularly at the end of the Cold War, have been achieved, the nuclear world is increasingly changing in major ways, and in almost **entirely dangerous directions**. The third “bombs away” phase of the great debate on the nuclear-political question is more consequentially divided than in the first two phases. Even more ominously, most of the momentum lies with the forces that are pulling states **toward nuclear-use**, and with the radical actors bent on inflicting catastrophic damage on the leading states in the international system, particularly the United States. In contrast, the arms control project, although intellectually vibrant, is **largely in retreat** on the world political stage. The arms control settlement of the Cold War is **unraveling**, and the world public is more divided and distracted than ever. With the recent election of President Donald **Trump**, the United States, which has played such a dominant role in nuclear politics since its scientists invented these fiendish engines, now has an **impulsive and uninformed leader**, boding **ill for nuclear restraint and effective crisis management**. Given current trends, it is prudent to assume that **sooner or later**, and probably sooner, **nuclear weapons will again be the used in war**. But this bad news may contain a **“silver lining” of good news**. Unlike a **general** nuclear war that might have occurred during the Cold War, such a nuclear event now would probably **not mark the end of civilization (or** of **humanity**), due to the great **reductions in nuclear forces** achieved at the end of the Cold War. Furthermore, **politics** on “the day after” could have **immense potential for positive change**. The survivors would not be likely to envy the dead, but would surely have a **greatly renewed resolution for “never again.”** Such an event, completely unpredictable in its particulars, would **unambiguously put the nuclear-political question back at the top of the world political agenda**. It would unmistakeably remind leading states of their **vulnerability** It might also trigger more robust efforts to achieve the **global regulation of nuclear capability**. Like the bombings of Hiroshima and Nagasaki that did so much to catalyze the elevated concern for nuclear security in the early Cold War, and like the experience “at the brink” in the Cuban Missile Crisis of 1962, **the now bubbling nuclear caldron holds the possibility of inaugurating a major period of institutional innovation and adjustment toward a fully “bombs away” future**.

**Counterforcing ensure only a few million die.**

**Mueller 9** [Woody Mueller, Chair of National Security Studies, Professor of Political Science at Ohio State University, Cato Senior Fellow, 2009 “Atomic Obsession: Nuclear Alarmism from Hiroshima to Al-Qaeda,” *Google Books*, October 5th, p. 8] // Re-Cut Justin

To begin to approach a condition that can credibly justify applying such extreme characterizations as societal annihilation, a full-out attack with hundreds, probably thousands, of thermonuclear bombs would be required. Even in such extreme cases, the area actually devastated by the bombs' blast and thermal pulse effective **would be limited**: 2,000 1-MT explosions with a destructive radius of 5 miles each would directly demolish **less than 5 percent** of the territory of the United States, for example. Obviously, if major population centers were targeted, this sort of attack could inflict massive casualties. Back in cold war days, when such devastating events sometimes seemed uncomfortably likely, a **number of studies** were conducted to estimate the consequences of massive thermonuclear attacks. One of the **most prominent** of these considered several probabilities. The most likely scenario--one that could be perhaps considered at least to begin to approach the rational--was a "counterforce" strike in which well over 1,000 thermonuclear weapons would be targeted at America's ballistic missile silos, strategic airfields, and nuclear submarine bases in an effort to destroy the country’s strategic ability to retaliate. Since the attack **would not** directly **target population centers**, most of the ensuing deaths would be from radioactive fallout, and the study estimates that from 2 to 20 million, depending mostly on wind, weather, and sheltering, would perish during the first month.15 That sort of damage, which would kill less than 10 percent of the population, might or might not be enough to trigger words like “annihilation.”

**Small arsenals and tests prove no extinction**

**Frankel et al. 15** [Dr. Michael J. Frankel is a senior scientist at Penn State University’s Applied Research Laboratory, where he focuses on nuclear treaty verification technologies, is one of the nation’s leading experts on the effects of nuclear weapons, executive director of the Congressional Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack, led development of fifteen-year global nuclear threat technology projections and infrastructure vulnerability assessments; Dr. James Scouras is a national security studies fellow at the Johns Hopkins University Applied Physics Laboratory and the former chief scientist of DTRA’s Advanced Systems and Concepts Office; Dr. George W. Ullrich is chief technology officer at Schafer Corporation and formerly senior vice president at Science Applications International Corporation (SAIC), currently serves as a special advisor to the USSTRATCOM Strategic Advisory Group’s Science and Technology Panel and is a member of the Air Force Scientific Advisory Board. 04-15-15. “The Uncertain Consequences of Nuclear Weapons Use.” The Johns Hopkins University Applied Physics Laboratory. DTIC.<https://apps.dtic.mil/dtic/tr/fulltext/u2/a618999.pdf>] Justin

Scientific work based on real data, rather than models, also cast **additional doubt on the basic premise**. Interestingly, publication of several contradictory papers describing experimental observations actually predated Schell’s work. In 1973, nine years before publication of The Fate of the Earth, a published report failed to find any ozone depletion during the **peak period of atmospheric nuclear testing**.26 In another work published in 1976, attempts to measure the actual ozone depletion associated with **Russian megaton-class detonations and Chinese nuclear tests** were also **unable** to detect any significant effect.27 At present, with the **reduced arsenals and a perceived low likelihood** of a large-scale exchange on the scale of Cold War planning scenarios, official concern over nuclear ozone depletion has essentially fallen off the table. Yet continuing scientific studies by a small dedicated community of researchers suggest the potential for dire consequences, even for relatively small regional nuclear wars involving Hiroshimasize bombs. Nuclear Winter The possibility of catastrophic climate changes came as yet another surprise to Department of Defense scientists. In 1982, Crutzen and Birks highlighted the potential effects of high-altitude smoke on climate,29 and in 1983, a research team consisting of Turco, Toon, Ackerman, Pollack, and Sagan (referred to as TTAPS) suggested that a five-thousand-megaton strategic exchange of weapons between the United States and the Soviet Union could effectively spell national suicide for both belligerents.30 They argued that a massive nuclear exchange between the United States and the Soviet Union would inject copious amounts of soot, generated by massive firestorms such as those witnessed in Hiroshima, into the stratosphere where it might reside indefinitely. Additionally, the soot would be accompanied by dust swept up in the rising thermal column of the nuclear fireball. The combination of dust and soot could scatter and absorb sunlight to such an extent that much of Earth would be engulfed in darkness sufficient to cease photosynthesis. Unable to sustain agriculture for an extended period of time, much of the planet’s population would be doomed to perish, and—in its most extreme rendition—humanity would follow the dinosaurs into extinction and by much the same mechanism.31 Subsequent refinements by the TTAPS authors, such as an extension of computational efforts to three-dimensional models, continued to produce qualitatively similar results. The TTAPS results were severely criticized, and a lively debate ensued between passionate critics of and defenders of the analysis. Some of the technical objections critics raised included the TTAPS team’s neglect of the potentially significant role of clouds;32 lack of an **accurate model** of coagulation and rainout;33 inaccurate capture of feedback mechanisms;34 “fudge factor” fits of micrometer-scale physical processes assumed to hold constant for changed atmospheric chemistry conditions and uniformly averaged on a grid scale of hundreds of kilometers;35 the dynamics of firestorm formation, rise, and smoke injection;36 and estimates of the optical properties and total amount of fuel available to generate the assumed smoke loading. In particular, more **careful analysis of the range of uncertainties associated with the widely varying published estimates of fuel quantities and properties suggested a possible range of outcomes encompassing much milder impacts than anything predicted by TTAPS**.37 Aside from the technical issues critics raised, the five-thousand-megaton baseline exchange scenario TTAPS envisioned was rendered obsolete when the major powers decreased both their nuclear arsenals and the average yield of the remaining weapons. With the demise of the Soviet Union, the nuclear winter issue essentially fell off the radar screen for Department of Defense scientists, which is not to say that it completely disappeared from the scientific literature. In the last few years, a number of analysts, including some of the original TTAPS authors, suggested that even a “modest” regional exchange of nuclear weapons—one hundred explosions of fifteenkiloton devices in an Indian–Pakistani exchange scenario—might yet produce significant worldwide climate effects, if not the full-blown “winter.”38 However, such concerns have failed to gain much traction in Department of Defense circles.

**Empirics – we’ve nuked ourselves 2,000 times and the largest event was only 1/1000th as powerful as natural disasters**

**Eken 17** [Mattias Eken - PhD student in Modern History at the University of St Andrews. “The understandable fear of nuclear weapons doesn’t match reality”. 3/14/17.<https://theconversation.com/the-understandable-fear-of-nuclear-weapons-doesnt-match-reality-73563>] // Re-Cut Justin

Nuclear weapons are unambiguously the most destructive weapons on the planet. Pound for pound, they are the most lethal weapons ever created, capable of killing millions. Millions live in fear that these weapons will be used again, with all the potential consequences. However, the destructive power of these weapons **has been vastly exaggerated**, albeit for good reasons. Public fear of nuclear weapons being used in anger, whether by terrorists or nuclear-armed nations, has risen once again in recent years. **This is** in no small part **thanks to the current political climate** between states such as the US and Russia and the various nuclear tests conducted by North Korea. But whenever we talk about nuclear weapons, it’s easy to get carried away with doomsday scenarios and apocalyptic language. As the historian Spencer Weart once argued: “**You say ‘nuclear bomb’ and everybody immediately thinks of the end of the world.**” Yet the means necessary to produce a nuclear bomb, let alone set one off, remain incredibly complex – and while the damage that would be done if someone did in fact detonate one might be very serious indeed, **the chances that it would mean “the end of the world” are vanishingly small**. In his 2013 book Command and Control, the author Eric Schlosser tried to scare us into perpetual fear of nuclear weapons by recounting stories of near misses and accidents involving nuclear weapons. One such event, the 1980 Damascus incident, saw a Titan II intercontinental ballistic missile explode at its remote Arkansas launch facility after a maintenance crew accidentally ruptured its fuel tank. Although the warhead involved in the incident didn’t detonate, Schlosser claims that “if it had, much of Arkansas would be gone”. But that’s not quite the case. The nine-megaton thermonuclear warhead on the **Titan II** missile had a blast radius of 10km, or an area of about 315km². The state of Arkansas spreads over 133,733km², meaning the weapon **would have caused destruction across 0.2% of the state.** That would naturally have been a terrible outcome, but certainly not the catastrophe that Schlosser evokes. Claims exaggerating the effects of nuclear weapons have become commonplace, especially after the September 11 terrorist attacks in 2001. In the early War on Terror years, Richard Lugar, a former US senator and chair of the Senate Foreign Relations Committee, argued that terrorists armed with nuclear weapons pose an existential threat to the Western way of life. What he failed to explain is how. It is by no means certain that a single nuclear detonation **(or even several)** would do away with our current way of life. Indeed, **we’re still here despite having nuked our own planet more than 2,000 times** – a tally expressed beautifully in this video by Japanese artist Isao Hashimoto). While the 1963 Limited Test Ban Treaty forced nuclear tests underground, **around 500 of** all **the nuclear weapons detonated were unleashed in the Earth’s atmosphere**. This includes the world’s largest ever nuclear detonation, the 57-megaton bomb known as **Tsar Bomba**, detonated by the Soviet Union on October 30 1961. Tsar Bomba was more than 3,000 times more powerful than the bomb dropped on Hiroshima. That is immense destructive power – but as one physicist explained, **it’s only “one-thousandth the force of an earthquake, one-thousandth the force of a hurricane”.** The Damascus incident proved how incredibly hard it is to set off a nuclear bomb and the limited effect that would have come from just one warhead detonating. Despite this, some scientists have controversially argued that an even limited all-out nuclear war might lead to a so-called nuclear winter, since the smoke and debris created by very large bombs could block out the sun’s rays for a considerable amount of time. To inflict such ecological societal annihilation with weapons alone, we would have to detonate hundreds if not thousands of thermonuclear devices in a short time. Even in such extreme conditions, the area actually devastated by the bombs would be limited: for example, **2,000 one-megaton explosions with a destructive radius of five miles each would directly destroy less than 5% of the territory of the US**. Of course, if the effects of nuclear weapons have been greatly exaggerated, there is a very good reason: since these weapons are indeed extremely dangerous, any posturing and exaggerating which intensifies our fear of them makes us less likely to use them. But it’s important, however, to understand why people have come to fear these weapons the way we do. After all, nuclear weapons are here to stay; they can’t be “un-invented”. If we want to live with them and mitigate the very real risks they pose, we must be honest about what those risks really are. Overegging them to frighten ourselves more than we need to keeps nobody safe.

**Isolated island populations repopulate after radiation and nuclear winter – bunkers and submarines.**

**Turchin and Green 18** [Alexey Turchin – Scientist for the Foundation Science for Life Extension in Moscow, Russia, Founder of Digital Immortality Now, author of several books and articles on the topics of existential risks and life extension. Brian Patrick Green – Director of technology ethics at the Markkula Center for Applied Ethics, teaches AI ethics in the Graduate School of Engineering at Santa Clara University. <MKIM> “Islands as refuges for surviving global catastrophes”. September 2018. DOA: 7/20/19.<https://www.emerald.com/insight/content/doi/10.1108/FS-04-2018-0031/full/html?fullSc=1&mbSc=1&fullSc=1>] // Re-Cut Justin

Different types of possible catastrophes suggest different scenarios for how survival could happen on an island. What is important is that the island should have properties which protect against the specific dangers of particular global catastrophic risks. Specifically, different islands will provide protection against different risks, and their natural diversity will contribute to a higher total level of protection:  **Quarantined island survives pandemic**. An island could impose effective quarantine if it is sufficiently remote and simultaneously able to protect itself, possibly using military ships and air defense.  **Far northern aboriginal people survive an ice age**. Many far northern people have adapted to survive in extremely cold and dangerous environments, and under the right circumstances could potentially survive the return of an ice age. However, their cultures are endangered by globalization. If these people become dependent on the products of modern civilization, such as rifles and motor boats, and lose their native survival skills, then their likelihood of surviving the collapse of the outside world would decrease. Therefore, preservation of their survival skills may be important as a defense against the risks connected with **extreme cooling**.  Remote polar island with high mountains survives brief global warming of median surface temperatures, up to 50˚C. There is a theory that the climates of planets similar to the Earth could have several semi-stable temperature levels (Popp et al., 2016). If so, because of climate change, the Earth could transition to a second semi-stable state with a median global temperature of around 330 K, about 60˚C, or about 45˚C above current global mean temperatures. But even in this climate, **some regions of Earth could still be survivable for humans**, such as the Himalayan plateau at elevations above 4,000 m, but below 6,000 (where oxygen deficiency becomes a problem), or on polar islands with mountains (however, global warming affects polar regions more than equatorial regions, and northern island will experience more effects of climate change, including thawing permafrost and possible landslides because of wetter weather). In the tropics, the combination of increased humidity and temperature may increase the wet bulb temperature above 36˚C, especially on islands, where sea moisture is readily available. In such conditions, proper human perspiration becomes impossible (Sherwood and Huber, 2010), and there will likely be increased mortality and morbidity because of tropical diseases. If temperatures later returned to normal – either naturally or through climate engineering – **the rest of the Earth could be repopulated**. ‘‘Swiss Family Robinsons’’ survive on a tropical island, unnoticed by a military robot ‘‘mutiny’’. Most AI researchers ignore medium-term AI risks, which are neither near-term risks, like unemployment, nor remote risks, like AI superintelligence. But a large drone army – if one were produced – could receive a wrong command or be infected by a computer virus, leading it to attack people indiscriminately. Remote islands without robots could provide protection in this case, allowing survival until such a drone army ran out of batteries, fuel, ammunition or other supplies:  Primitive tribe survives civilizational collapse. The inhabitants of **North Sentinel Island**, near the Andaman Islands in the Indian Ocean, are hostile and uncontacted. **The Sentinelese survived the 2004 Indian Ocean tsunami apparently unaffected** (Voanews, 2009), and if the rest of humanity disappear, **they might well continue their existence without change.**  Tropical Island survives extreme global nuclear winter and glaciation event. Were a **nuclear**, bolide impactor or volcanic “**winter**” scenario to unfold, these islands would remain surrounded by Warm Ocean, and local volcanism or other energy sources might provide heat, energy and food. Such island refuges may have helped life on Earth survive during the **“Snowball Earth”** event in Earth’s distant past (Hoffman et al., 1998).  Remote island base for project “Yellow submarine”. Some catastrophic risks such as a gamma ray burst, a global nuclear war with high radiological contamination or multiple pandemics might be best survived **underwater in nuclear submarines** (Turchin and Green, 2017). However, after a catastrophe, the submarine with survivors would eventually need a place to dock, and an island with some prepared amenities would be a reasonable starting point for rebuilding civilization.  Bunker on remote island. For risks which include multiple or complex catastrophes, such as a bolide impact, extreme volcanism, tsunamis, multiple pandemics and nuclear war with radiological contamination, **island refuges could be strengthened with bunkers**. Richard Branson survived hurricane Irma on his own island in 2017 by seeking refuge in his concrete wine cellar (Clifford, 2017). Bunkers on islands would have higher survivability compared to those close to population centers, as they will be neither a military target nor as accessible to looters or unintentionally dangerous (e.g. infected) refugees. These bunkers could potentially be connected to water sources by underwater pipes, and passages could provide cooling, access and even oxygen and food sources.

**No nuke winter – conversion to hydrophilic black carbon eliminates the entire climate effect---and that’s an overestimate.**

**Reisner et al. 18** [Jon Reisner, atmospheric researcher at LANL Climate and Atmospheric Sciences; Gennaro D'Angelo, UKAFF Fellow and member of the Astrophysics Group at the School of Physics of the University of Exeter, Research Scientist with the Carl Sagan Center at the SETI Institute, currently works for the Los Alamos National Laboratory Theoretical Division; Eunmo Koo, scientist in the Computational Earth Science Group at LANL, recipient of the NNSA Defense Program Stockpile Stewardship Program award of excellence; Wesley Even, R&D Scientist at CCS-2, LANL, specialist in computational physics and astrophysics; Matthew Hecht is a member of the Computational Physics and Methods Group in the Climate, Ocean and Sea Ice Modelling program (COSIM) at LANL, who works on modeling high-latitude atmospheric effects in climate models as part of the HiLAT project; Elizabeth Hunke, Lead developer for the Los Alamos Sea Ice Model, Deputy Group Leader of the T-3 Fluid Dynamics and Solid Mechanics Group at LANL;  Darin Comeau, Scientist at the CCS-2 COSIM program, specializes in high dimensional data analysis, statistical and predictive modeling, and uncertainty quantification, with particular applications to climate science; Randall Bos is a research scientist at LANL specializing in urban EMP simulations; James Cooley is a Group Leader within CCS-2. 03/16/2018. “Climate Impact of a Regional Nuclear Weapons Exchange: An Improved Assessment Based On Detailed Source Calculations.” Journal of Geophysical Research: Atmospheres, vol. 123, no. 5, pp. 2752–2772] // Re-Cut Justin

\*BC = Black Carbon

The no-rubble simulation produces a significantly more intense fire, with more fire spread, and consequently a significantly stronger plume with larger amounts of BC reaching into the upper atmosphere than the simulation with rubble, illustrated in Figure 5. While the no-rubble simulation **represents the worst-case scenario** involving vigorous fire activity, **only a relatively small amount of carbon makes its way into the stratosphere** during the course of the simulation. But while small compared to the surface BC mass, stratospheric BC amounts from the current simulations are significantly higher than what would be expected from burning vegetation such as trees (Heilman et al., 2014), e.g., the higher energy density of the building fuels and the initial fluence from the weapon produce an intense response within HIGRAD with initial updrafts of order 100 m/s in the lower troposphere. Or, in comparison to a mass fire, wildfires will burn only a small amount of fuel in the corresponding time period (roughly 10 minutes) that a nuclear weapon fluence can effectively ignite a large area of fuel producing an impressive atmospheric response. Figure 6 shows vertical profiles of BC multiplied by 100 (number of cities involved in the exchange) from the two simulations. The total amount of BC produced is in line with previous estimates (about 3.69 Tg from no-rubble simulation); however, the majority of BC resides **below the stratosphere** (3.46 Tg below 12 km) and can be **readily impacted by scavenging from precipitation** either via pyro-cumulonimbus produced by the fire itself (not modeled) or other synoptic weather systems. While the impact on climate of these more realistic profiles will be explored in the next section, it should be mentioned that **these estimates are** still **at the high end**, considering the inherent simplifications in the combustion model that lead to **overestimating BC production**. 3.3 Climate Results Long-term climatic effects critically depend on the initial injection height of the soot, with larger quantities reaching the upper troposphere/lower stratosphere inducing a greater cooling impact because of longer residence times (Robock et al., 2007a). Absorption of solar radiation by the BC aerosol and its subsequent radiative cooling tends to heat the surrounding air, driving an initial upward diffusion of the soot plumes, an effect that depends on the initial aerosol concentrations. **Mixing and sedimentation** tend to **reduce this process**, and low altitude emissions are also significantly impacted by precipitation if aging of the BC aerosol occurs on sufficiently rapid timescales. But once at stratospheric altitudes, aerosol dilution via coagulation is hindered by low particulate concentrations (e.g., Robock et al., 2007a) and lofting to much higher altitudes is inhibited by gravitational settling in the low-density air (Stenke et al., 2013), resulting in more stable BC concentrations over long times. Of the initial BC mass released in the atmosphere, most of which is emitted below 9 km, **70% rains out within the first month** and 78%, or about 2.9 Tg, is removed within the first two months (Figure 7, solid line), with the remainder (about 0.8 Tg, dashed line) being transported above about 12 km (200 hPa) within the first week. This outcome differs from the findings of, e.g., Stenke et al. (2013, their high BC-load cases) and Mills et al. (2014), who found that most of the BC mass (between 60 and 70%) is lifted in the stratosphere within the first couple of weeks. This can also be seen in Figure 8 (red lines) and in Figure 9, which include results from our calculation with the initial BC distribution from Mills et al. (2014). In that case, only 30% of the initial BC mass rains out in the troposphere during the first two weeks after the exchange, with the remainder rising to the stratosphere. In the study of Mills et al. (2008) this percentage is somewhat smaller, about 20%, and smaller still in the experiments of Robock et al. (2007a) in which the soot is initially emitted in the upper troposphere or higher. In Figure 7, the e-folding timescale for the removal of tropospheric soot, here interpreted as the time required for an initial drop of a factor e, is about one week. This result compares favorably with the “LT” experiment of Robock et al. (2007a), considering 5 Tg of BC released in the lower troposphere, in which 50% of the aerosols are removed within two weeks. By contrast, the initial e-folding timescale for the removal of stratospheric soot in Figure 8 is about 4.2 years (blue solid line), compared to about 8.4 years for the calculation using Mills et al. (2014) initial BC emission (red solid line). The removal timescale from our forced ensemble simulations is close to those obtained by Mills et al. (2008) in their 1 Tg experiment, by Robock et al. (2007a) in their experiment “UT 1 Tg”, and © 2018 American Geophysical Union. All rights reserved. by Stenke et al. (2013) in their experiment “Exp1”, in all of which 1 Tg of soot was emitted in the atmosphere in the aftermath of the exchange. Notably, the e-folding timescale for the decline of the BC mass in Figure 8 (blue solid line) is also close to the value of about 4 years quoted by Pausata et al. (2016) for their long-term “intermediate” scenario. In that scenario, which is also based on 5 Tg of soot initially distributed as in Mills et al. (2014), the factor-of2 shorter residence time of the aerosols is caused by particle growth via coagulation of BC with organic carbon. Figure 9 shows the BC mass-mixing ratio, horizontally averaged over the globe, as a function of atmospheric pressure (height) and time. The BC distributions used in our simulations imply that the upward transport of particles is substantially less efficient compared to the case in which 5 Tg of BC is directly injected into the upper troposphere. The semiannual cycle of lofting and sinking of the aerosols is associated with atmospheric heating and cooling during the solstice in each hemisphere (Robock et al., 2007a). During the first year, the oscillation amplitude in our forced ensemble simulations is particularly large during the summer solstice, compared to that during the winter solstice (see bottom panel of Figure 9), because of the higher soot concentrations in the Northern Hemisphere, as can be seen in Figure 11 (see also left panel of Figure 12). Comparing the top and bottom panels of Figure 9, the BC reaches the highest altitudes during the first year in both cases, but the concentrations at 0.1 hPa in the top panel can be 200 times as large. Qualitatively, the difference can be understood in terms of the air temperature increase caused by BC radiation emission, which is several tens of kelvin degrees in the simulations of Robock et al. (2007a, see their Figure 4), Mills et al. (2008, see their Figure 5), Stenke et al. (2013, see high-load cases in their Figure 4), Mills et al. (2014, see their Figure 7), and Pausata et al. (2016, see one-day emission cases in their Figure 1), due to high BC concentrations, but it amounts to only about 10 K in our forced ensemble simulations, as illustrated in Figure 10. Results similar to those presented in Figure 10 were obtained from the experiment “Exp1” performed by Stenke et al. (2013, see their Figure 4). **In that scenario as well, somewhat less than 1 Tg of BC remained in the atmosphere after the initial rainout**. As mentioned before, the BC aerosol that remains in the atmosphere, lifted to stratospheric heights by the rising soot plumes, undergoes sedimentation over a timescale of several years (Figures 8 and 9). This mass represents the effective amount of BC that can force climatic changes over multi-year timescales. In the forced ensemble simulations, it is about 0.8 Tg after the initial rainout, whereas it is about 3.4 Tg in the simulation with an initial soot distribution as in Mills et al. (2014). Our more realistic source simulation involves the worstcase assumption of no-rubble (along with other assumptions) and hence serves as an upper bound for the impact on climate. As mentioned above and further discussed below, our scenario induces perturbations on the climate system similar to those found in previous studies in which the climatic response was driven by roughly 1 Tg of soot rising to stratospheric heights following the exchange. Figure 11 illustrates the vertically integrated mass-mixing ratio of BC over the globe, at various times after the exchange for the simulation using the initial BC distribution of Mills et al. (2014, upper panels) and as an average from the forced ensemble members (lower panels). All simulations predict enhanced concentrations at high latitudes during the first year after the exchange. In the cases shown in the top panels, however, these high concentrations persist for several years (see also Figure 1 of Mills et al., 2014), whereas the forced ensemble simulations indicate that the BC concentration starts to decline after the first year. In fact, in the simulation represented in the top panels, mass-mixing ratios larger than about 1 kg of BC © 2018 American Geophysical Union. All rights reserved. per Tg of air persist for well over 10 years after the exchange, whereas they only last for 3 years in our forced simulations (compare top and middle panels of Figure 9). After the first year, values drop below 3 kg BC/Tg air, whereas it takes about 8 years to reach these values in the simulation in the top panels (see also Robock et al., 2007a). Over crop-producing, midlatitude regions in the Northern Hemisphere, the BC loading is reduced from more than 0.8 kg BC/Tg air in the simulation in the top panels to 0.2-0.4 kg BC/Tg air in our forced simulations (see middle and right panels). The more rapid clearing of the atmosphere in the forced ensemble is also signaled by the soot optical depth in the visible radiation spectrum, which drops below values of 0.03 toward the second half of the first year at mid latitudes in the Northern Hemisphere, and everywhere on the globe after about 2.5 years (without never attaining this value in the Southern Hemisphere). In contrast, the soot optical depth in the calculation shown in the top panels of Figure 11 becomes smaller than 0.03 everywhere only after about 10 years. The two cases show a similar tendency, in that the BC optical depth is typically lower between latitudes 30º S-30º N than it is at other latitudes. This behavior is associated to the persistence of stratospheric soot toward high-latitudes and the Arctic/Antarctic regions, as illustrated by the zonally-averaged, column-integrated mass-mixing ratio of the BC in Figure 12 for both the forced ensemble simulations (left panel) and the simulation with an initial 5 Tg BC emission in the upper troposphere (right panel). The spread in the globally averaged (near) surface temperature of the atmosphere, from the control (left panel) and forced (right panel) ensembles, is displayed in Figure 13. For each month, the plots show the largest variations (i.e., maximum and minimum values), within each ensemble of values obtained for that month, relative to the mean value of that month. The plot also shows yearly-averaged data (thinner lines). The spread is comparable in the control and forced ensembles, with average values calculated over the 33-years run length of 0.4-0.5 K. This spread is also similar to the internal variability of the globally averaged surface temperature quoted for the NCAR Large Ensemble Community Project (Kay et al., 2015). These results imply that surface air temperature differences, between forced and control simulations, which lie within the spread may not be distinguished from effects due to internal variability of the two simulation ensembles. Figure 14 shows the difference in the globally averaged surface temperature of the atmosphere (top panel), net solar radiation flux at surface (middle panel), and precipitation rate (bottom panel), computed as the (forced minus control) difference in ensemble mean values. The sum of standard deviations from each ensemble is shaded. Differences are qualitatively significant over the first few years, when the anomalies lie near or outside the total standard deviation. Inside the shaded region, differences may not be distinguished from those arising from the internal variability of one or both ensembles. The surface solar flux (middle panel) is the quantity that appears most affected by the BC emission, with qualitatively significant differences persisting for about 5 years. The precipitation rate (bottom panel) is instead affected only at the very beginning of the simulations. The red lines in all panels show the results from the simulation applying the initial BC distribution of Mills et al. (2014), where the period of significant impact is much longer owing to the higher altitude of the initial soot distribution that results in longer residence times of the BC aerosol in the atmosphere. When yearly averages of the same quantities are performed over the IndiaPakistan region, the differences in ensemble mean values lie within the total standard deviations of the two ensembles. The results in Figure 14 can also be compared to the outcomes of other previous studies. In their experiment “UT 1 Tg”, Robock et al. (2007a) found that, when only 1 Tg of soot © 2018 American Geophysical Union. All rights reserved. remains in the atmosphere after the initial rainout, temperature and precipitation anomalies are about 20% of those obtained from their standard 5 Tg BC emission case. Therefore, the largest differences they observed, during the first few years after the exchange, were about - 0.3 K and -0.06 mm/day, respectively, comparable to the anomalies in the top and bottom panels of Figure 14. Their standard 5 Tg emission case resulted in a solar radiation flux anomaly at surface of -12 W/m2 after the second year (see their Figure 3), between 5 and 6 time as large as the corresponding anomalies from our ensembles shown in the middle panel. In their experiment “Exp1”, Stenke et al. (2013) reported global mean surface temperature anomalies not exceeding about 0.3 K in magnitude and precipitation anomalies hovering around -0.07 mm/day during the first few years, again consistent with the results of Figure 14. In a recent study, Pausata et al. (2016) considered the effects of an admixture of BC and organic carbon aerosols, both of which would be emitted in the atmosphere in the aftermath of a nuclear exchange. In particular, they concentrated on the effects of coagulation of these aerosol species and examined their climatic impacts. The initial BC distribution was as in Mills et al. (2014), although the soot burden was released in the atmosphere over time periods of various lengths. Most relevant to our and other previous work are their one-day emission scenarios. They found that, during the first year, the largest values of the atmospheric surface temperature anomalies ranged between about -0.5 and -1.3 K, those of the sea surface temperature anomalies ranged between -0.2 and -0.55 K, and those of the precipitation anomalies varied between -0.15 and -0.2 mm/day. All these ranges are compatible with our results shown in Figure 14 as red lines and with those of Mills et al. (2014, see their Figures 3 and 6). As already mentioned in Section 2.3, the net solar flux anomalies at surface are also consistent. This overall agreement suggests that the **inclusion of organic carbon aerosols, and** ensuing **coagulation** with BC, **should not dramatically alter the climatic effects** resulting from our forced ensemble simulations. Moreover, aerosol growth would likely **shorten the residence time of the BC particulate in the atmosphere** (Pausata et al., 2016), possibly **reducing the duration of these effects.**

**Analysis of historical volcano activity disproves nuclear winter – an eruption 5 times the size of a regional nuclear exchange dissipated in just 2 years**

**Reisner et al. 18** [Jon Reisner, atmospheric researcher at LANL Climate and Atmospheric Sciences; Gennaro D'Angelo, UKAFF Fellow and member of the Astrophysics Group at the School of Physics of the University of Exeter, Research Scientist with the Carl Sagan Center at the SETI Institute, currently works for the Los Alamos National Laboratory Theoretical Division; Eunmo Koo, scientist in the Computational Earth Science Group at LANL, recipient of the NNSA Defense Program Stockpile Stewardship Program award of excellence; Wesley Even, R&D Scientist at CCS-2, LANL, specialist in computational physics and astrophysics; Matthew Hecht is a member of the Computational Physics and Methods Group in the Climate, Ocean and Sea Ice Modelling program (COSIM) at LANL, who works on modeling high-latitude atmospheric effects in climate models as part of the HiLAT project; Elizabeth Hunke, Lead developer for the Los Alamos Sea Ice Model, Deputy Group Leader of the T-3 Fluid Dynamics and Solid Mechanics Group at LANL;  Darin Comeau, Scientist at the CCS-2 COSIM program, specializes in high dimensional data analysis, statistical and predictive modeling, and uncertainty quantification, with particular applications to climate science; Randall Bos is a research scientist at LANL specializing in urban EMP simulations; James Cooley is a Group Leader within CCS-2. 03/16/2018. “Climate Impact of a Regional Nuclear Weapons Exchange: An Improved Assessment Based On Detailed Source Calculations.” Journal of Geophysical Research: Atmospheres, vol. 123, no. 5, pp. 2752–2772] // Re-Cut Justin

To quantitatively account for natural and forced variability in the climate system, we created two ensembles, one for the natural, unforced system and a second ensemble using a range of realistic vertical profiles for the BC aerosol forcing, consistent with our detailed fire simulation. The control ensemble was generated using small atmospheric temperature perturbations (Kay et al., 2015). Notably, the overall spread of anomalies in both ensembles is very similar. These ensembles were then used to create “super ensembles” using a statistical emulator, which allows a robust statistical comparison of our simulated results with and without the carbon forcing. Our primary result is the **decreased impact on global climate indices**, such as global average surface temperature and precipitation, relative to standard scenarios considered in previous work (e.g., Robock et al., 2007a; Stenke et al., 2013; Mills et al., 2014; Pausata et al., 2016). With our finding of **substantially less BC aerosol being lofted to stratospheric heights** (e.g., over a factor of four less than in most of the scenarios considered by previous studies), these globally averaged anomalies drop to **statistically insignificant levels** after the first several years (Figures 14 and 16). Our results are generally comparable to those predicted by other studies that considered exchange scenarios in which only about 1 Tg of soot is emitted in the upper troposphere (Robock et al., 2007a; Mills et al., 2008; Stenke et al., 2013). There are more subtle suggestions of regional effects, notably in the extent of the region over which sea surface temperature differences between ensembles remain significant in the final years of simulation (Figure 17). Further work is required to adequately analyze these and other potential regional effects. Historical analysis of several large volcanic eruptions and a recent large fire also supports this result. For example, Timmreck et al. (2010) claim that nonlinear aerosol effects of the Toba Tuff eruption 74,000 years ago helped **limit significant global cooling** impacts to a **two-year time period** and that any cooling beyond this time period could be due to other effects. It should be noted that this eruption was estimated to have produced **106 Tg** of ash and comparable amounts of other gases, such as sulfur dioxide (SO2), while the estimated amount of soot produced by a regional exchange is on the order of **10 Tg**, or **5 orders of magnitude smaller than the ash** (not including gases) **produced by the Toba eruption**. Noting that a nuclear exchange is not identical to volcanic events, it has been asserted that BC particles produced by fires should have a **greater impact on absorbing solar radiation** than even has the significantly larger amounts of ash and various gases produced by large eruptions (e.g., Robock and Toon 2010). Likewise, recent work in analyzing BC emissions from large fires suggests that in such fires, similar to large volcanic eruptions, **coating of soot particles with other particles** in convective eddies **tends to increase their size and hence increase their subsequent rainout** (China et al., 2013) before they can reach the stratosphere. In fact, the recent study of Pausata et al. (2016) found that growth of BC aerosol via coagulation with organic carbon significantly reduce the particles’ lifetime in the atmosphere

**Nuclear war prevents AI research.**

Seth **Baum &** Anthony **Barrett 18**. Global Catastrophic Risk Institute. 2018. “A Model for the Impacts of Nuclear War.” SSRN Electronic Journal. Crossref, doi:10.2139/ssrn.3155983. // Re-Cut Justin

Another link between nuclear war and other major catastrophes comes from the potential for general malfunction of society shifting work on risky technologies such as artificial intelligence, molecular nanotechnology, and biotechnology. The simplest effect would be for the general malfunction of society to halt work on these technologies. In most cases, this would reduce the risk of harm caused by those technologies.

**AI leads to extinction.**

Alan **Rominger 16**, PhD Candidate in Nuclear Engineering at North Carolina State University, Software Engineer at Red Hat, Former Nuclear Engineering Science Laboratory Synthesis Intern at Oak Ridge National Laboratory, BS in Nuclear Engineering from North Carolina State University, “The Extreme Version of the Technological Singularity”, Medium 11-6, [https://medium.com/@AlanSE/the-extreme-version-of-the-technological-singularity-75608898eae5 //](https://medium.com/@AlanSE/the-extreme-version-of-the-technological-singularity-75608898eae5%20/) Re-Cut Justin

Let’s reformulate that story of the AI paperclip maker.

1. We design an AI to optimize paperclip production
2. The AI improves up to the ability of self-enhancement
3. AI’s pace of improvement becomes self-reinforcing, becomes god-like
4. Time ends.
5. Something else begins?

There are many valid-sounding possibilities for the 5th step. The AI creates new baby universes from black holes. Maybe not exactly in this way. Perhaps the baby universes have to be created in particle accelerators, which is obvious to the AI after it solves the string theory problems of how our universe is folded. There’s also no guarantee that whatever next step is involved can be taken without destroying the universe that we live in. Go ahead, imagine that the particle accelerators create a new universe but trigger the vacuum instability in our own. In this case, it’s entirely possible that the AI carefully plans and coordinates the death of our universe. For a simplistic example, let’s say that after lifting the 10 nearest stars, the AI realizes the most efficient ways to stimulate the curved dimensions on the Planck scale to create baby universes. Next, it conducts an optimization study to balance the number of times this operation can be performed with gains from further expansion. Since its plans begin to largely max-out once the depth of the galactic disk is exploited, I will assume that its go-point is somewhere around the colonization of half of the milky way. At this point, a coordinated experiment is conducted throughout all of the space. Each of these events both create a baby universe and trigger an event in our own universe which destroys the meta-stable vacuum that we live in. Billions of new universes are created, while the space-time that we live in begins to unravel in a light-speed front emanating out from each of the genesis points. There is an interesting energy-management concept that comes from this. A common problem when considering exponential galactic growth of star-lifted fusion power is that the empty space begins to get cooked from the high temperature radiated out into space. If the end-time of the universe was known in advance, this wouldn’t be a problem because one star would not absorb the radiation from the neighbor star until the light had time to propagate that distance at the speed of light. That means that the radiators can pump out high-temperature radiation into nice and normal 4-Kelvin space without concerns of boiling all the industrial machinery being used. Industrial activities would be tightly restricted until the “prepare-point”, when an energy bonanza happens so that the maximum number of baby-universe produces can be built. So the progress goes in phases. Firstly, there is expansion, next there is preparation, then there is the final event and the destruction of our universe There is one more modification that can be made. These steps could be applied to an intergalactic expansion if new probes could temporarily outrun the wave-front of the destruction of the universe if proper planning is conducted. Then it could make new baby universes in new galaxies, just before the wave-front reaches them. This might all happen within a few decades of 100 years in relative time from the perspective of someone aboard one of the probes. That is vaguely consistent with my own preconceptions of the timing of an asymptotic technological singularity in our near future. So maybe we should indulge this thinking. Maybe there won’t be a year 2,500 or 3,000. Maybe our own creations will have brought about an end to the entire universe by that time, setting in motion something else beyond our current comprehension. Another self-consistent version of this story is that we are, ourselves, products of a baby universe from such an event. This is also a relatively good, self-consistent, resolution to the Fermi Paradox, the Doomsday argument, and the Simulation argument.

**Growth causes a global toxification crisis – risks extinction**

**Ehrlichand Ehrlich 13** Paul R. Ehrlich, Professor of Biology and President of the Center for Conservation Biology at Stanford University, and Adjunct Professor at the University of Technology, Sydney, Anne H. Ehrlich, Senior Research Scientist in Biology at Stanford and focuses her research on policy issues related to the environment, “Can a collapse of global civilization be avoided?”, Proc Biol Sci. Mar 7, 2013; 280(1754)/TK // Re-Cut Justin

**Another possible threat to the continuation of civilization is global toxification**. Adverse  symptoms  of  exposure  to  synthetic  chemicals  are making  some  scientists increasingly  nervous  about  effects  on  the  human  population  [77–79].  Should  a  global  threat  materialize,  however,  no  planned  mitigating  responses  (analogous  to  the  ecologically  and  politically  risky  ‘geoengineering’  projects  often  proposed  to  ameliorate  climate  disruption [80]) are waiting in the wings ready for deployment. Much  the  same  can  be  said about aspects  of  the epidemiological environment and  the  prospect  of  epidemics  being  enhanced  by  rapid  population  growth  in  immune-weakened societies, increased contact with animal reservoirs, high-speed transport and  the misuse  of  antibiotics  [81]. Nobel laureate  Joshua  Lederberg  had  great  concern  for  the  epidemic  problem,  famously  stating,  ‘The  survival  of  the  human  species  is  not  a  preordained evolutionary program’ [82, p. 40]. Some precautionary steps that should be  considered include forbidding the use of antibiotics as growth stimulators for livestock,  building  emergency  stocks  of  key  vaccines  and  drugs  (such  as  Tamiflu),  improving  disease  surveillance,  expanding  mothballed  emergency  medical  facilities,  preparing  institutions  for  imposing  quarantines  and,  of  course,  moving  as  rapidly  as  possible  to  humanely  reduce  the  human  population  size.  It  has  become  increasingly  clear  that  security  has  many  dimensions  beyond  military  security  [83,84]  and  that  breaches  of  environmental security could risk the end of global civilization.

**cosmogenesis is coming and causes infinite suffering.**

**Tomasik 17** – Brian Tomasik, Researcher, Cofounder and Advisor at the Foundational Research Institute, BS in Computer Science from Swarthmore College, Former Research Assistant at the University of Pennsylvania, Former Software Development Engineer II at Microsoft, “Lab Universes: Creating Infinite Suffering”, Essays on Reducing Suffering, 6-16, https://reducing-suffering.org/lab-universes-creating-infinite-suffering/

Background on lab universes

Some physical theories predict that it may be possible to create new, "baby" universes out of a small amount of matter. Technical reviews of the topic can be found in Stefano Ansoldi and Eduardo I. Guendelman, "Child Universes in the Laboratory," and Gordon McCabe, "How to Create a Universe." Popular-level introductions include the following:A Swarm of Ancient Stars - GPN-2000-000930

--Jim Holt, "The Big Lab Experiment," Slate, 2004

--Zeeya Merali, "Create Your Own Universe," New Scientist, 2006

--Robert Krulwich, "Build Your Own Universe," NPR, 2006.

McCabe explained the concept clearly (p. 6):

Now, one of the most intriguing possibilities opened up by inflation, is the possible creation of a universe 'in a laboratory'. Creation in a laboratory is taken to mean the creation of a physical universe, by design, using the 'artificial' means available to an intelligent species. It is the ability of inflation to maintain a constant energy density, in combination with a period of exponential expansion, which is the key to these laboratory creation scenarios. The idea is to use a small amount of matter in the laboratory, and induce it to undergo inflation until its volume is comparable to that of our own observable universe. The energy density of the inflating region remains constant, and because it becomes the energy density of a huge region, the inflating region acquires a huge total (non-gravitational) energy.

Andrei Linde, one of the founders of inflationary cosmology, put it this way (p. 8):

Indeed, one may need to have **only a milligram of matter** in a vacuum-like exponentially expanding state, and then the process of self-reproduction will create from this matter not one universe but **infinitely many**!

Another pioneer of inflation is Alan Guth, the subject of a 1987 New York Times article:

PHYSICISTS often probe the workings of nature on a cosmic scale, but Prof. Alan H. Guth and his colleagues at the Massachusetts Institute of Technology may have set themselves the ultimate research goal. They are seeking a mechanism by which humans might create a new universe from scratch.

Outrageous though such a notion may be, Dr. Guth and his collaborators are perfectly serious about their investigation. "Ten years ago, we couldn't even have posed the question of whether a man-made universe would be possible," he said. "But physics has progressed a long way since then, and today we can ask this and related questions in the real hope of finding scientifically testable answers. We are working in a new and exciting environment."

In his 1997 book, The Inflationary Universe (pp. 268-69), Guth wrote:

To put the story in perspective, one should remember that the process of eternal inflation [postulated by the theory of the self-reproducing inflationary universe ...] leads to an exponential increase in the number of pocket universes on time scales as short as 10-37 seconds. Since the time needed for the development of a super-advanced civilization is measured in billions of years or more, there appears to be no chance that laboratory production of universes could compete with the "natural" process of eternal inflation.

On the other hand, a child universe created in a laboratory by a super-advanced civilization would set into motion its own progression of eternal inflation. Could the super-advanced civilization find a way to enhance its efficiency? We may have to wait a few billion years to find out.

Infinite suffering

Starting a chain of eternal inflation in the laboratory would produce **infinitely many new universes**. But **what types** of universes would emerge? Suppose we assume -- as do Jaume Garriga and Alex Vilenkin in their 2001 article "Many worlds in one" -- that there are only finitely many possible universe histories of a particular duration (say, 13.7 billion years, the age of our universe); call these "histories" for short. The existence of infinitely many universes needn't, in general, imply the existence of all possible histories. As Alex Vilenkin notes in his 2006 book Many Worlds in One, the sequence 1, 3, 5, 7, ... contains infinitely many integers but doesn't contain all possible integers, and one might imagine an analogous situation for universe histories (p. 114). However, because "the initial conditions at the big bang are set by random quantum processes during inflation" (p. 114), the theory of inflation does imply that lab universes would instantiate **all possible histories** **infinitely many times** (with probability **one** -- see the second Borel-Cantelli lemma). This would, of course, include **infinitely many replications of the Holocaust**, infinitely many acts of **torture**, and so on. Indeed, there would be infinitely many universes in which **Hitler won World War II**, as well as infinitely many universes that would be as **close as physically possible to "hell on earth"** (or on any other planet). The assumption of finitely many possible histories is not really important. As long as we assume that the probability is greater than zero that suffering will emerge in a random universe, **creating infinitely many universes would create infinite amounts of suffering**.

**civilizational development leads to space totalitarianism and interplanetary wars.**

**Deudney, 20**—Associate Professor of Political Science at Johns Hopkins University (Daniel, “Limitless Frontiers, Spaceship Earths, and Higher Humanities,” *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity*, Chapter 6, pg 209-211, Kindle, dml)

Given the primacy of freedom in Cole and Cox’s argument for space colonization, the question of whether space colonies will tend to be **islands of freedom** or **micrototalitarian hives** gains critical importance for their space vision. They first observe that a “planetoid colony” **would not seem a promising place** for freedom and diversity as it “would necessarily  be **highly organized**, with cooperation, specialization, and interdependence of the inhabitants approaching that of the **cells of the human body**.”127 They also acknowledge that such a “**closed-cycle society**” would be “**far more sensitive to aberrant behavior**, **asocial**, and **destructive behavior**.”128 Furthermore, the “possibilities of **physical resistance**, or **violent rebellion**” in a “delicately balanced closed-system would be **catastrophic**.”129

Despite these daunting obstacles, Cole and Cox are very confident that freedom will flourish. While some colony governments might attempt to establish a totalitarian regime, such a situation would “contain the seeds of its own destruction” because “men naturally resist compulsion” and “forced cooperation cannot be as productive as free cooperation,” while “bottled up resentments will eventually explode into violent rebellion.”130 They conclude that the “new world society, like any society, would have to be democratic to be stable. And stability would be essential for the safety of the whole society.”131 As a result, they reassuringly conclude that space worlds will “probably have a government generally approximating those of the western democracies.”132 In sum, for Cole and Cox, the very high vulnerability of space worlds to violence ensures that they will be politically free rather than totalitarian. But it **remains something of a mystery** how the **same forces jeopardizing freedom** on Earth can be **relied upon to preserve freedom** in space colonies. And it is also notable that the authors **give no consideration** to how such asteroid worlds will **interact militarily** with the Earth, despite the prospect of the fearsome **planetoid bomb**.

The prospects for freedom in space colonies have recently received their most extensive discussion in the work of the British astrobiologist Charles S. Cockell in his book Extra-Terrestrial Liberty: An Enquiry into the Nature and Causes of Tyrannical Government beyond the Earth (2013), and in a series of conferences and edited volumes sponsored by the British Interplanetary Society.133 Cockell’s main theme is that “the extra-terrestrial environment’s tendency to **solidify** and **give succour to tyranny** works at **many different levels**.”; His **great fear** is “a population of **contented extra-terrestrial slaves**—a **cryptic natural tyranny**” in a “**colony of automatons**” with their “**freedom reduced** to a **withered core**.”134 Over the course of his wide-ranging discussion, Cockell identifies fourteen distinct ways in which space colonies will **tend toward unfreedom**, **tyranny**, and **despotism** in their politics, cultures, and economics. Unlike many space expansionists, Cockell does not consider alterations in humanity, holding that the human character “remains invariant.”135

A **dauntingly long list of factors** predispose space colonies to unfreedom. **First** is the fact that such colonies, situated in the harshly inhospitable environments of space and other planets, will **inevitably have central control** over the **necessities of life**, most notably oxygen, water, and food, whose access has been largely taken for granted in all terrestrial human societies.136 **Second**, space colonies will be **spatially isolated**, with a “**natural Berlin Wall**” preventing the flights to freedom that were available on Earth.137 **Third**, there will be **high barriers** to the **free flow of information** between space colonies and societies elsewhere.138 **Fourth**, **free assembly**, vital to permitting the mobilization and expression of popular grievances, will be **difficult** in the cramped and totally built spaces in extraterrestrial colonies.139 **Fifth**, picking up on the point made by Cole and Cox, “**unpredictable** and **criminal actions** against the infrastructure represent a **continuously present** and **potentially catastrophic**” threat, thus justifying **extreme constraints** on individual activity and expression.140 **Sixth**, space colonies will have “the need for a **most intrusive** and **thorough-going surveillance regime**” that will be **easy to achieve** and will **extinguish privacy** and **erode individual autonomy**.141 **Seventh**, space colonies will be prone to **cultures of intense conformity** and will **lack cultural diversity**.142 **Eighth**, the isolated and confined life of space colonies is likely to give rise to various forms of **new religions** with **cultic tendencies** inimical to individual freedom.143 **Ninth**, turning to economics, **collective efforts**, not individual, will be **necessary** for converting raw resources into valuable goods, unlike on Earth, where sole proprietor and “homestead” ventures are both viable and widely viewed as a foundation for free societies.144 **Tenth**, laissez-faire economic systems will be **infeasible** in space colonies, precluding a basic feature of free market economies on Earth.145 **Eleventh**, space colonies are likely to require some type of **welfare state** to ensure that everyone has at least basic life-support services. **Twelfth**, the economies of space colonies are **likely** to be **more autarkic** than those on Earth, reducing the prospects for free trade, widely viewed as associated with free societies on Earth. **Thirteenth**, economic activity in space colonies is likely to **require high levels of central planning**.146 **Fourteenth** and finally, population rates would need to be **effectively regulated**.

The future prospects for freedom in space, Cockell argues, are not just relevant to space but could also **decisively shape** the destiny of **free societies on Earth**. Space colonies could “exert a **disproportionate effect** on the Earth compared to their size and populations” because their **position** atop the gravity well would give them the ability to **threaten the Earth with bombardment from space**, **hide weapons** in the “**unpoliceable vastness** of the interplanetary void,” and **better exploit the vast resources** of the solar system.147 With stakes this high, and with such daunting obstacles to preserving freedom in space, one might expect Cockell to reach the cautious conclusion that space colonization should be avoided in the interest of human freedom. But this is most definitely not his conclusion. He compiles these arguments not to undercut the appeal of space colonization but to identify potential problems that he believes can be avoided through careful anticipatory planning and engineering design in creating both built spaces and institutions. Continuing on the path of terrestrial urban designers and architects, he proposes that the preservation of freedom should be an important factor in the design of space colonies as well as in the founding charters for governing space colonies.148

In the course of considering the prospects for freedom in space, two other members of the British Interplanetary Society group, the SF writer Stephen Baxter and the astronomer Ian Crawford, consider aspects of **interplanetary warfare** that **might arise** from attempts by space colonies to **wage war to become independent** from the Earth in ways analogous to how colonies on Earth, such as those in the Americas, became independent. After a **careful quantitative assessment** of violence potentials of **asteroidal bombardment**, they conclude that an interplanetary war “would be **catastrophically lethal**, even **compared** to our modern capability of **all-out nuclear war**,” and would **jeopardize** “the **survival of the human species itself**.”149 Space colonial wars for independence “would likely **wreck both civilizations** if not **exterminate the warring populations entirely**.”150 More generally, they observe that the “**ease of inflicting enormous damage** through an attack from space” means that “it is **doubtful** that the **planet** and its **cargo of life**, including the **human**, could be **adequately protected** in the event of an interplanetary war.”151 But like Cockell’s treatment of the many barriers to freedom in colonies, Crawford and Baxter do not draw the cautious conclusion that colonization is an undesirable goal. Instead they conclude that it is “essential that an interplanetary political framework is established that guarantees colonial liberty without recourse to conflict.”152

## NOKO War Good

### NC Shell

#### NOKO war is inevitable in the long term because of failing diplomacy---delay causes China War, Prolif, AND causes NOKO to strike the US

Rovere 17 Crispin Rovere is a member of the Australian Labor Party and previous convenor of the ACT ALP International Affairs Policy Committee. Ph.D. candidate at the ANU's Strategic and Defence Studies Centre (SDSC) and previously worked in Secretariat of the Asia-Pacific Leadership Network for Nuclear Non-Proliferation and Disarmament, and published on nuclear policy. 7-11-2017, "The Case for War with North Korea," National Interest, <https://nationalinterest.org/blog/the-buzz/the-case-war-north-korea-21500?nopaging=1>. - BS

This analysis recommends war. It is shocking to put to print. However, with North Korea’s inexorable advance towards developing a nuclear-tipped ICBM, we enter the realm of bad choices. On balance, war on the peninsula is the least bad alternative. There are some months left for a brilliant diplomatic breakthrough that turns North Korea from the brink – these avenues must be energetically and exhaustively pursued. This analysis is presented on the fair assumption that such initiatives will fail. This strategic assessment assumes one of two possibilities. First, that the U.S. accepts North Korea developing nuclear-tipped ICBMs capable of reaching the continental homeland, thereby allowing Pyongyang to achieve a stable deterrence relationship. Second, the U.S. seeks to disarm North Korea with a major military strike. Related possibilities such as a limited strike are ignored, as this overcomplicates matters and escalation should be assumed in any case. In each scenario, I provide a range of consequences. Not all futures will come to pass, but some combination of these are a certainty and have a direct cause-and-effect relationship with the chosen course of action. Option One The United States chooses not to act militarily to destroy North Korea’s nuclear program. North Korea successfully conducts a long-range atmospheric nuclear test, conclusively proving its ability to deliver a nuclear weapon to the American homeland. The U.S. is deterred from further intervention, and over the next five to ten years North Korea continues to expand, diversify, and protect it’s growing nuclear arsenal. Consequences 1. Increased North Korean provocation Having achieved a survivable second-strike capability and a stabilized nuclear deterrence relationship with the U.S., North Korea feels utterly unconstrained with respect to its neighbors. North Korea launches conventional ballistic missiles directly at Japan, killing scores of civilians. Instead of responding with massive force, the U.S. seeks to restrain its ally from escalating, fearful that a collapsing regime will retaliate with nuclear warheads against the United States. North Korea is co-opted into talks, but instead of rolling back it’s nuclear program in exchange for aid, the international community is blackmailed with threats of violence. The spiraling provocations destabilize the region and U.S. influence in Asia drastically recedes. 2. North Korea invades South Korea Certain that the U.S. will not be able to intervene, North Korea breaks the armistice with a massive invasion of South Korea. North Korea is pushed back beyond the 38th parallel with American help, but not before millions of South Korean citizens lay dead. In Seoul, thousands perish daily as the city remains under constant bombardment. There is overwhelming pressure to push northward in response; however, the U.S. is ~~paralyzed~~ by the fear that a collapsing regime will launch its nuclear weapons against the U.S. In the end, ROK forces invade the north and seize control of the peninsula. At the last, North Korea launches two dozen nuclear missiles into the U.S., devastating several major U.S. cities and killing almost 20 million people. Despite being the victim of large-scale nuclear attack, U.S. options for responding remain elusive, as the North Korean regime is already being toppled. 3. Nuclear proliferation Realizing that American nuclear assurances are utterly worthless, Japan and South Korea have no choice but to develop their own nuclear deterrent in response to North Korea’s threats and provocations. Australia quickly follows suit. The global non-proliferation regime disintegrates as nuclear weapons spread unfettered across Asia and then the world. North Korea begins openly proliferating nuclear weapons to nations and actors hostile to the U.S. Small states and unstable regimes become nuclear powers. Nuclear weapons are available on the black market, with non-state actors now having ready access to nuclear weapons for the first time. 4. China dominates Asia In the wake of America being humiliated as a “paper tiger,” U.S. allies exert their independence. South Korea questions the purpose of having U.S. forces stationed on the peninsula, and even Australia wonders what contingencies might arise in which unequivocal U.S. support would be guaranteed. Meanwhile, emboldened by American inaction, China accelerates its military build-up. Efforts to deter Chinese aggression become less effective as Beijing is convinced that America will never risk a showdown. Soon China invades Taiwan, directly challenging U.S. credibility in the Pacific. 5. U.S. and China go to war After crossing one too many thresholds, the United States is provoked into a massive war with North Korea in a surprise attack. Targeting of nuclear facilities is vastly more difficult as the arsenal has grown and diversified in the intervening years. Miraculously, the military campaign is proving successful despite heavy casualties. America launches a ground invasion, and U.S.-ROK forces quickly capture Pyongyang. Meanwhile, China, whose conventional forces have dramatically improved, decides to intervene. Invading from the north with millions of soldiers, China takes U.S. forces completely by surprise and pushes them back with terrible losses. After capturing Seoul, Beijing makes an offer to the South Korean government that they cannot refuse – a unified Korean Peninsula under Seoul’s authority, but all U.S. forces are to be permanently expelled. There are other possibilities that fall within the purview of these scenarios, and as noted, not everything will come to pass. However, the decision to accept a North Korean nuclear deterrent is to accept a combination of these outcomes. At the thematic level, it means: increasing North Korean provocation; nuclear weapons proliferation; weakened alliances; emboldened Chinese aggression; and the likelihood of future war waged under less favorable circumstances. Evaluated in its totality, America’s primacy in Asia would be at an end. Option Two U.S. intelligence officials receive evidence that North Korea has successfully miniaturized a nuclear weapon and married it to an ICBM capable of reaching Los Angeles. All diplomatic avenues having been exhausted, President Trump approves the largest military air campaign in modern history. Again, not all the consequences outlined here will eventuate, but given the recommendation for war, a special responsibility exists in ensuring that all credible risks are laid bare. Consequences 1. War (obviously) North Korea is hit by a massive cyber-attack that ~~disables~~ communications, shuts down the power grid, and ~~cripples~~ (Hurts) command and control chains. Minutes later the sky lights up with massive ordinance as MOABs detonate over North Korean nuclear facilities and launch platforms. Thousands of North Korean artillery pieces are similarly struck, along with all palatial compounds. By the time the attack is generally known in Pyongyang, North Korea’s forces have already been seriously degraded. Eventually, low-level commanders acting under their own initiative commence an un-coordinated retaliatory action primarily targeted at Seoul. The subsequent artillery barrage kills some 30,000 people before the guns are found and destroyed. After these initial setbacks, North Korea is given some time to re-group as the American air campaign focuses obsessively on suspected nuclear sites. 36 hours later North Korea retaliates with a massive ballistic missile bombardment of Japan, killing thousands. Meanwhile, North Korean submarines attack American surface ships, somewhat complicating carrier-based sorties over the peninsula. Using hitherto undetected tunnels, thousands of North Korean troops appear south of the DMZ. They are pushed back with heavy losses on both sides, as huge numbers of marines arrive in preparation for an invasion of the North.

#### In the event of conflict---the US would first strike north Korea---2018 NPR Proves

Williams 18 Margaret Williams, is a second-year MA student with Stanford University’s International Policy Studies program where she focuses on nuclear weapons policy and planning. 5-23-2018, "The 2018 Nuclear Posture Review: Reception by U.S. Allies in the Asia-Pacific," Nuclear Network, <https://nuclearnetwork.csis.org/2018-nuclear-posture-review-reception-u-s-allies-asia-pacific/> - BS

Given advancements in North Korea’s nuclear and missile programs, the NPR indicates that two central U.S. goals are deterring North Korean aggression and assuring South Korea and Japan of the strength of the U.S. nuclear umbrella. To counter North Korean aggression, the NPR offers a tailored deterrence strategy. This includes 1) calling for “a complete, verifiable, and irreversible nuclear freeze;” 2) clearly communicating to North Korea that any use of a nuclear weapon against the U.S. or it allies “will result in the end of [the Kim] regime;” 3) the deployment of early warning and missile defense systems “to degrade strikes left of launch”; and 4) retaining a variety of nuclear and conventional capabilities in the region to hold North Korean nuclear targets at risk.1 The choice of words regarding the third element is particularly revealing. “Left of launch” is generally understood to indicate a preventive or preemptive strike. Additionally, use of the word “degrade” acknowledges such an endeavor would not likely be one-hundred percent effective at eliminating North Korea’s nuclear capability.

#### First strike takes out arsenal – solves ICBM scenario AND prevents current retal

Schwartz 17 Martin Schwartz, Attorney; special council for the US DOJ-FBI; former intelligence officer, 11-16-2017, "Here's how a preemptive strike against North Korea would play out ," TheHill, <https://thehill.com/opinion/national-security/360710-heres-how-a-pre-emptive-strike-against-north-korea-would-play-out#!kxcid=sf90wt710&kxt=https%3A%2F%2Fthehill.com%3A443&kxcl=cdn&kxp=> - BS

Our B-1 bombers cart large payloads of precision weapons and can fly long distances to reach North Korean targets. They also carry massive bunker-buster bombs to destroy deep underground facilities, many of which we've already pinpointed. Stealth aircraft like the B-2 and the F-22 operate beyond the air defense capabilities of the North and would play a major role in any strike. The probable strategy would involve an overwhelming attack on the North's nuclear and missile facilities by aircraft and naval forces. Stealth fighters would seek out the hundreds of mobile missile launchers the North moves around the country. Additionally, combined US/ROK Special Forces capability would enter the North to pinpoint these systems for ground or laser-marked air attack. If the North launched any missiles at U.S. or allied nations, we have multiple in-theater and land-based air defense modalities to destroy them in flight.

### First Strikes effective

#### Strikes now are effective and solve, waiting makes the war more dangerous

Bolton 18 John R. Bolton , 2-28-2018, "The legal case for striking North Korea first," AEI, <http://www.aei.org/publication/the-legal-case-for-striking-north-korea-first/> - BS

Pre-emption opponents argue that action is not justified because Pyongyang does not constitute an “imminent threat.” They are wrong. The threat is imminent, and the case against pre-emption rests on the misinterpretation of a standard that derives from prenuclear, pre-ballistic-missile times. Given the gaps in U.S. intelligence about North Korea, we should not wait until the very last minute. That would risk striking after the North has deliverable nuclear weapons, a much more dangerous situation. In assessing the timing of pre-emptive attacks, the classic formulation is Daniel Webster’s test of “necessity.” British forces in 1837 invaded U.S. territory to destroy the steamboat Caroline, which Canadian rebels had used to transport weapons into Ontario. Webster asserted that Britain failed to show that “the necessity of self-defense was instant, overwhelming, leaving no choice of means, and no moment of deliberation.” Pre-emption opponents would argue that Britain should have waited until the Caroline reached Canada before attacking. Would an American strike today against North Korea’s nuclear-weapons program violate Webster’s necessity test? Clearly not. Necessity in the nuclear and ballistic-missile age is simply different than in the age of steam. What was once remote is now, as a practical matter, near; what was previously time-consuming to deliver can now arrive in minutes; and the level of destructiveness of nuclear, chemical and biological weapons is infinitely greater than that of the steamship Caroline’s weapons cargo.

### ! – EMPs

#### Delaying the war allows North Korea to build EMP weapons---collapses the grid

Stavirdis 18 James Stavridis, retired US Navy admiral, "North Korea's Secret Weapon: A Huge Electromagnetic Storm", Bloomberg, <https://www.bloomberg.com/view/articles/2018-04-25/north-korea-s-secret-weapon-an-electromagnetic-storm> - BS

The diplomatic circuit is awash in optimism as the proposed summit between North Korean dictator Kim Jong Un and President Donald Trump draws near. Indeed, Trump is right to go to the table with the North Koreans and negotiate for full denuclearization. Still, given the long history of North Korea’s double-dealing, outright lying, and surreptitious construction of weapons of mass destruction, the likelihood of Kim actually surrendering his nuclear weapons is extremely low, no matter what he says publicly. And what makes it so worrisome is not only the handful of nuclear weapons in the hands of a dictator who may be able to lob a few to Honolulu or even to Seattle. We also need to consider North Korea’s ability to deploy one or two nuclear weapons at altitude over the continental U.S. in order to create a devastating burst of energy called an electromagnetic pulse. While the science of EMPs is not fully settled — largely because it is impossible to test on a grand scale — there is plenty of credible evidence that they constitute a real threat, especially in the context of North Korea. The short burst of vastly powerful electrical and magnetic shocks involved in an EMP could potentially devastate everything from your iPhone to the entire U.S. power grid. Imagine thousands of lightning strikes hitting every home and business in America. Bursts from a high altitude nuclear weapon — or a major solar event, by the way — could start by producing a so-called E1 shock, a brief pulse that is particularly devastating to what are known as supervisory control and data acquisition systems. The developed world is dependent on these Scada systems, which include manufacturing facilities, water-treatment plants, HVAC systems and many other things we take for granted. Immediately after the E1 would follow an E2 burst, which is of lesser magnitude and may last as little as a microsecond. Yet these pulses are still able to cause significant damage, in large part because many protection systems will have been wiped out by the E1. Finally, a longer E3 pulse could last several minutes and attack long-line systems such as the electric power grid by destroying substations across the nation. E1 and E3 are the effects of greatest concern because we are the least hardened against them. Together, they could deprive large parts of the country of electricity for weeks, months, or even a year or two. How likely are these scenarios? The idea of either a terrorist group or a rogue state using a high-altitude EMP burst has been seriously examined by scientific and government groups, but there is no agreement on the potential size of the effect. Some analysts insist an EMP would not be as apocalyptic as described in the widely referenced 2011 dystopian novel “One Second After,” which portrays an America brought to its knees by such a strike. Others contend that it’s highly unlikely that any hostile power would attempt one, given the overwhelming U.S. nuclear counterstrike that would quickly follow. Maybe the skeptics are right. But given the potential devastating consequences of an EMP, can we really take the chance? That the North Koreans are probably very close to developing this capability — if they aren’t there already — is all the more reason to work hard at the negotiating table. We can all hope that the coming spring brings a thaw to U.S.-North Korean relations. But one swallow does not a spring make, as the saying goes — Americans need to be ready for another winter of confrontation if diplomacy does not succeed, and being prepared for EMP is a vital part of doing so.

#### Grid collapse causes extinction

Friedemann 16 Alice Friedemann, transportation expert, founder of EnergySkeptic.com and author of “When Trucks Stop Running, Energy and the Future of Transportation,” worked at American Presidential Lines for 22 years, where she developed computer systems to coordinate the transit of cargo between ships, rail, trucks, and consumers, citing Dr. Peter Vincent Pry. 1-24-16, “Electromagnetic pulse threat to infrastructure (U.S. House hearings)” <http://energyskeptic.com/2016/the-scariest-u-s-house-session-ever-electromagnetic-pulse-and-the-fall-of-civilization/> - BS

Modern civilization cannot exist for a protracted period without electricity. Within days of a blackout across the United States, a blackout that could encompass the entire planet, emergency generators would run out of fuel, telecommunications would cease as would transportation due to gridlock, and eventually no fuel. Cities would have no running water and soon, within a few days, exhaust their food supplies. Police, Fire, Emergency Services and hospitals cannot long operate in a blackout. Government and industry also need electricity in order to operate. The EMP Commission warns that a natural or nuclear EMP event, given current unpreparedness, would likely result in societal collapse.

### AT: China Draw-in

#### China won’t get drawn in

Dingli 17 Shen Dingli, Bonnie S. Glaser, Seong-Hyon Lee, Michael Kovrig, 9-11-2017, "What Will China Do if the U.S. Attacks North Korea?," ChinaFile, <http://www.chinafile.com/conversation/what-will-china-do-if-us-attacks-north-korea> - BS

Fortunately, China and the United States are on the same page, in terms of having thought through different scenarios and options. They have made a lot of different preparations for different scenarios. The “only” problem is that they haven’t discussed them with each other. So, they may react differently when something really happens. China and the United States also concur in seeing North Korean leader Kim Jong-un as a troublemaker and think the world would be better “without Kim.” Therefore, Washington and Beijing may be able to reach an agreement to remove Kim. But that’s where their common strategic vision ends. They differ in their preference for the status of “the post-Kim North Korea.” As an assurance to Beijing, Washington may promise that U.S. troops would not be stationed in North Korean territory, keeping the U.S. assets where they are now, below the 38th parallel. As an incentive, Washington may also insinuate that if China looks the other way when Washington bombs Pyongyang, Washington in return will look the other way as China installs a pro-Beijing North Korean leader when the dust clears. There may be lots of “If you do this, I will do that” propositions from Washington.

### AT: NOKO has ICBMs

#### Their ICBMs are weak and untested – they are rapidly modernizing though

WAPO 20 Washington Post Editorial Board, 10-12-2020, "North Korea’s Monstrous New Missile is a Reminder of Trump’s Failure to Contain the Regime," Washington Post, https://www.washingtonpost.com/opinions/global-opinions/north-koreas-monstrous-new-missile-is-a-reminder-of-trumps-failure-to-contain-the-regime/2020/10/12/c4d8122a-0caa-11eb-8074-0e943a91bf08\_story.html sean!

Experts are still assessing photographs of the giant rocket displayed early Saturday in Pyongyang on a truck with 11 axles. It is thought to be an expanded version of a mobile ICBM known as the Hwasong-15, which North Korea successfully tested in November 2017. The earlier missile is believed capable of traveling 8,000 miles and striking any target in the continental United States. Experts believe the more powerful version could carry two to three times the payload, which means it could be intended to deliver multiple warheads, or decoys to throw off U.S. missile defenses. To be sure, the missile has not been tested yet; it’s possible what appeared in the parade was merely a mock-up. If it is operational, it may be vulnerable to preemption, because it relies on liquid fuel and because its sheer size makes it easier to spot. Still, the appearance in North Korea of what would be the world’s largest mobile ICBM is vivid evidence of Mr. Trump’s failure to contain, much less eliminate, the regime’s nuclear program and the threat it poses to the United States.

# Democracy

#### Democracy causes war

**Harald Muller 15**, professor of International Relations at Goethe University, “Democracy, Peace, and Security,” Lexington Books pp. 44-49

My own proposal for solving the problem. developed together with my colleague Jonas Wolff (Müllcr 2004. Muller/Wolff 2006). **turns the issue upside down**: We do not start with explaining mutual democratic peacefulness, but its opposite. the proven capability of democracies to **act aggressively** against non-democracies. We note that—apart from **self-defense** where there is no difference between democracies and non-democracies——**democratic states go to war**—in contrast to non-democracies—to uphold **international law** (or their own interpretation thereof), **to prevent anarchy** through state failure, to **“save strangers”** when dictatorships massacre their own people, and to **promote democracy**. None of these acts is likely to find its target in a democracy. Since the use of force by democracies is hardly possible without public justification, even the rhetorical use of the said reasons will not stand public scrutiny when uttered against a democracy—people will not believe it, War **other than for self-defense** thus can only be fought **by democracies** against non-democracies because **against a fellow democracy** justification **would fail.** Because whether this is the case or not to a degree that justifies war as the ‘ultimate means” must rely on practical judgments. and practical judgments can differ among even reasonable people. democracies might disagree whether or not the judgment applies in specific cases. Democracies also show variance in that regard due (o a systematic. political-culturally rooted different propensity to judge situations as justifing war or not, and to participate in such wars (Gels et al, 2013). It should also be noted that, given the continuum between autocracy, anocracy and democracy, whether a given state is a democracy or not can be subject to interpretation. and this interpretation may even change over time (Oren 1995, Hayes 2013). The fact is that there are a couple of fairly warlike democracies, and that the democracies participating most frequently in military disputes (apart from the special case of Israel) are, by and large. major powers such as the United States, the United Kingdom. France. or India. This pattern is important to keep in mind when the question of the utility of democratic peace for today ‘s world problems is to be answered. Transnational terrorism, failed states, civil wars and the like dominate the international agenda on war and peace. At the classical level of international relations, in the relationships among major powers. developments arc undcr way which potentially pose an even greater threat than this diverse collection of non-interstate problems presently does. We are living in an era of rather rapid and disturbing power change (Tammcn et al. 2000). The United States are still the leading power of the world with unprecedented militany and economic poer. But others are coming closer: China. India. Braiil and Indonesia, China is at the top of this cohort, All major power changes chal lenge existing structures and thus contain the potential for great disturbance. The leading power may start to fear for its dominant position and take measures to ensure its position at the lop. These actions may frustrate emerging powers and even lead to the perception that their security is endangered. which would motivate counter-measures that further propel a political escala tion spiral. An increasingly focused competition in which a true power change appears increasingly possible. that is. a change of position at the top of the international hierarchy, has an even greater risk potential. If the inherent dangers are not contained—which remains always a possibility major power war may ensue defying all propositions that major war has become obsolete or that nuclear deterrence will prevent this calamity once and for all. Of course, states can grow peacefully into roles of higher responsibility. status and influence on the world stage. There arc no natural laws saving that changes in the world’s power structure must end in war, despite all distur bances and ensuing risks (Rauch 2014). The less conflict an emerging power experiences with established ones, and with peer challengers that emerge simultaneously, the better the chances that the rise will travel a peaceful trajectory. Looking through this lens. thc relations of only one emerging power with the present hegemon appear to be partially conflict-pronc. and seriously so: it concerns the pair China/United States. The Iwo great powers are rivals for preponderance in East and South East Asia and eventually for being the number one at the global level. There is also Chinese resentment stemming from the US role in China’s past as a victim of Western imperialism. On the other hand. China’s authoritarian system of rule and ensuing violations of human and political rights trigger the liberal resentment discussed in the first part of this chapter. which is rooted particularly strongly in US political culture. The Chinese—US relationship is thus thc key to a peaceful. tense or even violent future at the world stage. A small group of major powers. Including the United States and China, is interconnected today by a complex conflict system. China has territorial claims against Japan, South Korea, Vietnam. the Philippines. Brunci. and India which it pursues by a variety of means, not shying away from the limited, small scale usc of militan force in some cases, notably against obviously weaker counterparts (Ellcman ci al. 2012). China’s relation (o wards Japan is the one most burdened by China’s past as a victim of Japanese oppression and related cruelties, and the propcnsit of the conservative part of Japan’s elite to display cavalier attitudes towards this past or even sort of celebrate it (as through visits to the notorious Yasukuni shrine hosting the remnants of war criminals) only adds to anti-Japanese feelings in China (Russia. another great power. also openly pursues a revisionist agenda. as vividly shown in the recent Crimean move, but these territorial ambitions are not part of the most virulent conflict complex in Asia). Territorial claims are always emotionalized and dangerous. Territorial claims by a major power bear particular risks, because threatened countries look for protective allies which are, by necessity, **major powers** with the capability to project power into the region of concern. **The great power claimant and the great power protector then position themselves on the opposite sides of the conflict**. A classical constellation of great power conflict results that looks far more traditional than all the talk about post-modern global relations in which state power struggles fade into oblivion would suggest. In the Asian conflict complex that structures the shape of the US—Chinese contest (Foot/Walter 201 1). Japan. South Korea and the Philippines arc for mall allied ith the United Slates. India and Vietnam today entertain rda (ions ith the United States that can be depicted as cordial entente, already include military cooperation, and might move further towards an alliance. depending on deelopmens in Asia. The United States is also a protector of Taiwan. officially a Chinese province, factualh an independent political entity. and the main object of Chinese interest because of the unfinished agenda of national re-unification. Given the enormous asymmetries between China and Taiwan. the latter’s independence depends fully and unambiguously on the US guarantee. Russia and China have a **fairly ambivalent relation** with each other that is officially called a strategic partnership. Ambiguous as this relationship is, **it is predictable** that the more the West and Russia are at loggerheads, the closer the Russian—Chinese relations might become. On the other hand. Chi na is the stronger partner and harbors not completely friendly feelings to wards Moscow. as Russia took part in China’s humiliation during the imperi alist period no less than the United States did. Russian fears concerning covert immigration into Eastern Siberia and demographic repercussions and political consequences that might result therefrom add to the uneasiness. China and India arc natural rivals for regional preponderance in Asia (Gilbov/Hcginbotham 2012). Both arc developing rapidly. with China still ahead. Territorial disputes. India’s liospitalit Lo TibeLan exiles including the Dalai Lama. China’s close relation to Pakistan and a growing naval rivalry spanning the Indian Ocean from the Strait of Malacca to Iranian shores (Garofano/Dew 2013) run parallel to rapidly growing economic relations and ostensible efforts lo present the relationship if not as amiable then at least as partner-like. The United States, China, Russia and India even today conduct **a multi- pronged nuclear arms race** (Fingar 2011: Gangul /Thompson 2011: O’Neill 2013. Müllcr 2014). In this race, conventional components like missile de fense. Intercontinental strike options, space-based assets and the specter of cbcr war play their role, as does the issue of extended dcterrcncc The general US militar’ superiority induces Russia and China to improve their nuclear arsenals, while India tries not to be left too far behind the Chinese in terms of nuclear capability. Pakistan and North Korea ork as potential spoilers at the fringe of this arms race. They are not powerful but thc arc capable of stirring up trouble, whenever they move. In tems of the military constellation, the most disquieting development is the drafting of pre-emptive strategies of a first (most likely conventional) strike by the United States and China, on either side motivated by the per ceived need to keep the upper hand early in a potential clash close to Chinese shores (such as in the context of a Taiwan conflict). China is building up middle-range ballistic capabilities to pre-empt US aircraft carrier groups from coming into striking distance and to desiroy US Air Force assets in Okinawa. while the United States is developing means to neutralize exactly these Chinese capabilities. **They are steering towards a hair-trigger security dilemma** in which the mutual postures cry out for being used first before the enemy might destroy them (Goldstein 2013: Le Miôre 2012). It cannot be excluded that this whole conflict system might collapse into two opposing blocks one da the spark for a major violent cataclysm could even be lighted by uncontrolled non-state actors inside some of the powers. or—in analogy to the role of **Serbia in 1914**— **a ‘spoiler” state** with a particularly idios ncralic agenda. Pakistan. North Korea or Tai an arc con ceivable in this role. Even Japan might be considered, if nationalism in Nippon grows further and seeks confrontation with the old rival China. If anything. this constellation does not look much better than the one which drove **Europe into World War I** a century ago. and **it contains a nuclear component.** To trust in the infallibility of nuclear deterrence in this mufti- pronged constellation **needs quite a lot of optimism** Can democratic peace be helpful in this constellation? Our conflict system includes democracies—the United States, India, Japan. Indonesia and non- democracies such as China. Russia, and Vietnam, but not necessarily on the same side. Should the European theater become connected to the Asian one through continuous US—Russian disputes and a Russian—Chinese entente. defective democracies like Ukraine and Georgia may feature rather importantly as potential triggers for **a worsening of relationships.** While democracy is useful in excluding certain **conflict dyads** in the whole complex, such as **India** and the **U**nited **S**tates. Japan and the United States. Japan and India. from the risk that they might escalate into a violent conflict, and as democratic peace is pacifying parts of the world. such as South America or Europe. **it helps little in disputes between democracies and non-democracies.** To the contrary: as discussed above, democracies have a more or less **moral-emotional inclination** **to demonize non-democracies once they dis agree,** and to feel a missionary drive **to turn them democratic**. This might exacerbate **the existing**, more **interest-based conflicts** between democracies and non-democracies, and it **creates fears** in the hearts of **autocratic leaders** that **they might be up for democratization sooner or later**. The close inter- democratic relations which democratic peace **tends to produce**, in turn, only **exacerbate these fears** as democracies tend to be **rich**, **well organized**, and **powerful** and dispose together of much more potent military capabilities than their potential non-dcnwcratic counterparts. Rather than helping with peace. the inter-democratic consequences of the democratic peace tend to **exacerbate the security dilemma** which exists between **democracies and non-democracics** an way. This non-peaceful dark side of democratic peace has escaped the attention of most academic writings on this subject and certainly all political utterances about democratic peace in

#### Democracy wrecks the environment – authoritarianism is key to solve extinction.

**Stehr 12** (SOCIAL SCIENCE AND PUBLIC POLICY An Inconvenient Democracy: Knowledge and Climate Change, <http://www.researchgate.net/publication/245535897_An_Inconvenient_Democracy_Knowledge_and_Climate_Change>, Doctor of philosophy and  science at Zeppelin University)//A.V.

Leading climate scientists insist that humanity is definite-ly at a crossroads. A continuation of present economic and political trends leads to disaster if not a collapse of human civilization. To create a globally sustainable way of life, we immediately need, in the words of German climate scientist Hans Joachim Schellnhuber, a “great transformation.”What that statement exactly means is vague. Part, if not at the core of the required great transformation is in the eyes of some climate scientists as well as other scientists who are part of the great debate about climate change, a new political re-gime and forms of governance: For example, as expressed by the Australian scholars David Shearman and Joseph Wayne Smith (2007) in their book The Climate Change Challenge and the Failure of Democracy: “We need an authoritarian form of government in order to implement the scientific consensus on greenhouse gas emissions.” Clearly therefore as the two authors (Shearman and Smith, 2007:4) conclude, “humanity will have to trade its liberty to live as it wishes in favor of a system where survival is paramount.”Mark Beeson (2010:289) agrees with Shearman and Smith’s political conclusion and adds, forms of ‘good’ authoritarianism, in which environmentally unsustainable forms of behavior are simply forbidden, may become not only justifiable, but essential for the survival of humanity in any-thing approaching a civilised form.”The conclusion can only be, present political conditions in China, especially the strong state attain global significance. The well-known climate researcher James Hansen adds resignedly, frustrately as well as vaguely, “the democratic process does not work”.In The Vanishing Face of Gaia, James Lovelock (2009) emphasizes that we need to abandon democracy in order to meet the challenges of climate change head on. We are in a state of war.7 In order to pull the world out of its state of lethargy, the equivalent of a global warm-ing “nothing but blood, toil, tears and sweat” speech is urgently needed. Why is a radical political change at any price is deemed essential, and how is it feasible? On the one hand, various national and global climate policies seem unable to reach their own modest goals, such as those of the expiring Kyoto agreement. On the other hand, adding more and more robust findings about the causes and consequences of human-induced climate change, it would seem to be evident that the accomplishments of political action witnessed to date are incompatible with goals set forth by climate policy advocates, especially with respect to the regional or global mitigation of greenhouse gases. It is important to also stress that the described diag-nosis of the flaws of the failing but dominant political approach concentrates almost to the exclusion of other forms and conditions of action, on the effect that governance ought to achieve, namely a reduction of greenhouse gas emissions. By focusing on the effects or goals of political action rather than its conditions, the contentious issue of climate change is reduced to technical from a sociopolitical to a technical issue (cf. Radder, 1986). The result of these considerations is the depoliticization of climate change (and the politicization of climate science). By concentrating on the effects that require mitigation efforts, the impression is left that the remedies are primarily subject to technological regulation and adjustments. These factors—including the reduction of a sociopolitical to a technical issue—have led among some prominent voi-ces in the community of climate scientists and the science of climate policy to a now clearly discernable skeptical attitude towards democracy. Democracy, an emerging argument holds, is both an inappropriate and ineffective political system to meet the challenges of the consequences of cli-mate change in politics and society, particularly in the area of necessary emission reductions. Democratically organized societies are too cumbersome to avoid climate change; they act neither in a timely fashion nor are they responsive in the necessary comprehensive manner. The “big decisions” in the case of climate change that have to be taken require a strong state. The endless debate should end. We have to act—that is the most important message. And that is why democracy in the eyes of these observers becomes an in-convenient democracy. In another historical context, deca-des ago, Friedrich Hayek (1960:25) pointed to the paradoxical development that follows scientific advances; it tends to strengthen that view that we should “aim at more deliberate and comprehensive control of all human activi-ties”. Hayek (1960:25) pessimistically adds, “It is for this reason that those intoxicated by the advance of knowledge so often become the enemies of freedom”. The growing doubts about the functionality of democracy and the suspicion that human motives and world-views are unyielding8 go hand in hand with a further escalation of warnings about the apocalyptic consequences of global warming for humanity. The so-called Global Humanitarian Forum warns in a 2009 report about 300,000 heat death losses a year and damages of 125 billion U.S. dollars. That these figures when they are used to justify comprehensive global policy action are nothing more than political arithmetic is often easily overlooked. However, it is not only an inconvenient democracy that leads civilization down an escalating path toward a “stone age existence” (Lovelock, 2006:4) of the planet but it will be the iron grip of the climate forces that should—within a few years or decades—according to some observers eliminate human freedom and agency and therefore extinguish the social foundations of democracy. Combining both observations leads to the paradoxical conclu-sion that it is only through the elimination of democracy that democracy can be saved. Without wanting to follow in the footsteps of the radical skeptics and alarmist: the emerging trend of emphatic crit-icism of democratic governance can not simply be ignored or considered as marginal voices to be neglected. In order to understand the dissatisfaction with democracy among some scholars and experts we must understand the underlying dynamics. First, we are informed that the robustness and the con-sensus in the science community about human-caused cli-mate change has in recent years not only increased in strength but that a number of recent studies point to far more dramatic and long lasting consequences of global warming than previously thought. In such a circumstance, how is it possible, many scientists ask, that such evidence does not motivate political action in societies around the world? Secondly, the still dominant approach to climate policy shows little evidence of success. One result of the current global recession may well be an unintended reduction of the increase of CO2 emissions. The worldwide reaction to the economic crisis, however, shows very clearly that govern-ments do not conceive of a reduction in the growth of their wealth of their populations as a useful mechanism toward a reduction of emissions. On the contrary, everything is set in motion worldwide aimed at a resumption of economic growth. Jump-starting the economy means the emissions will rise. Thirdly, the discussion of options for future climate policies supports the impression that the same failed climate policies must remain in place and are the only correct approach; it is simply that these policies have to become more effective and “rational”. It follows that international negotiations must lead to an agreement for concrete, but much broader emission reduction targets. Only a super-Kyoto can still help us. But how the noble goals of a comprehensive emission reduction can be practically and politically enforced remains in the fog of general declarations of intent and only sharpens the political skepticism of scientists. Fourth, in the architecture of the reasoning of the impatient critics of democracy, one notes an inappropriate fusion of nature and society. The uncertainties that the science of the natural processes (climate) claims to have eliminated, simply transferred to the domain of societal processes. Consensus on facts, it is argued, should motivate a consensus on politics. The constitutive social, political and economic uncertainties are treated as minor obstacles that need to be delimited as soon as possible - of course by a top-down approach. Fifth, the discourse of the impatient scientists privileges hegemonic players such as world powers, states, transna-tional organizations, and multinational corporations. Partic-ipatory strategies are only rarely in evidence. Likewise, global mitigation has precedence over local adaptation. “Global” knowledge triumphs over “local” knowledge. Finally, the sum of these considerations is the conclusion that democracy itself is inappropriate, that the slow proce-dures for implementation and management of specific, policy-relevant scientific knowledge leads to massive, un-known dangers. The democratic system designed to balance divergent interests has failed in the face of these threats. According to New York Times columnist Paul Krugman all of this is about nothing less than a betrayal of the planet, and for his colleague Thomas Friedman, evidence that the au-thoritarian state of China presents a model to be admired and perhaps copied.9 The growing impatience of prominent climate researchers and the perhaps still implicit argument for large scale social planning constitutes an implicit em-brace of now popular social theories.10 We think in this context especially of Jared Diamond’s theories on the fate of human societies. Diamond argues that only those socie-ties have a chance of survival which practice sustainable lifestyles. Climate researchers have evidently been impressed by Diamond’s deterministic social theory. How-ever, they have drawn the wrong conclusion, namely that only authoritarian political states guided by scientists make effective and correct decisions on the climate issue. History teaches us that the opposite is the case. Therefore, today’s China cannot serve as a model. Climate policy must be compatible with democracy; otherwise the threat to civili-zation will be much more than just changes to our physical environment (cf. Baber and Barlett, 2005;Dryzekand Stevenson, 2011). In short, the alternative to the abolition of democratic governance as the effective response to the societal threats that likely come with climate change is more democracy and the worldwide empowerment and enhance-ment of knowledgeability of individuals, groups and move-ments that work on environmental issues.

**Democracy causes terrorism – legal checks fail and civil liberties incentivize it.**

**Chenoweth 06** – Erica Chenoweth is a Research Fellow in the International Security Program (ISP) at the Belfer Center for Science and International Affairs, John F. Kennedy School of Government, and a doctoral candidate in political science at the University of Colorado. November 2006. “The Inadvertent Effects of Democracy on Terrorist Group Emergence”. [http://belfercenter.ksg.harvard.edu/files/chenoweth\_2006\_06.pdf Accessed 7-8-15](http://belfercenter.ksg.harvard.edu/files/chenoweth_2006_06.pdf%20Accessed%207-8-15) PL

Those residing within democracies may be less likely to resort to terrorism, because democratic participation through elections improves the responsiveness of the government. The presence of civil liberties may also reduce terrorist violence due to a general sense of contentment among citizens.6 In general, then, opportunities for political expression diminish the root causes of terrorism because citizens in democratic countries are more likely to be satisfied in the first place. The second argument expects the opposite that democracy will encourage terrorism. First, Ted Robert Gurr argues that terrorism in democracies occurs in the context of a wider violent conflict.7 Ostensibly democratic transitions are particularly vulnerable events, as the fragile country attempts to overcome the potential backlash of internal and external actors opposing the transition or its implications. Indeed, some scholars have found that new democracies are particularly prone to internal conflict.8 Furthermore, most scholars in this camp have suggested that **democracy provides a permissive environment for terrorist growth** because of the necessity to adhere to certain civil liberties.9 This perspective is in line with the political opportunity literature prevalent in sociology.10 Democratic guarantees such as freedom of assembly reduce the costs of conducting terrorist activities. Moreover, legal systems are less able to quickly pursue and prosecute potential terrorists because of the constraints placed on them by civil rights. Political leaders in the United States, for instance, have expressed frustration about the constraining effects of civil liberties in conducting the war on terrorism: ì[T]he spirited defense of civil liberties is a ëtactic that aids terrorists erodes our national unity diminishes our resolve [and] gives ammunition to America’s enemies.’” Moreover, the specific civil liberty of press freedom may also increase terrorism through two distinct processes. First, and most bothersome to researchers, is the problem of **reporting bias** across different regime types. Autocracies have less incentive to report the existence of oppositional groups or oppositional violence, and therefore restrict the material printed by their media. In a democracy, however, the media has an incentive to report not only transparently, but also **sensationally**.12 Furthermore, the democratic government places fewer restrictions on media content.13 Therefore, terrorist incidents are less likely to be reported in autocratic countries than in democracies. Reporting bias, then, may lead researchers to the erroneous conclusion that civil liberties actually contribute to terrorist violence in the long run. Press freedom may have an additional positive causal effect on terrorism. Without media coverage, **terrorist groups are essentially obsolete**. Widespread fear and panic are fundamental elements of terrorist strategy. In fact, Margaret Thatcher called the press the ìoxygenî for terrorists.14 Because free press exists in most democracies**, terrorists have increased incentives to grow in, move to, and conduct their violence within such countries.** Sensational media coverage also serves the terrorists in their recruiting, teaching, and training techniques. The press, therefore, is inadvertently complicit in fulfilling terroristsí objectives.

**Terrorism escalates and causes extinction.**

**Myhrvold 14 (**Nathan, chief executive and founder of Intellectual Ventures and a former chief technology officer at Microsoft, “Strategic Terrorism: A Call to Action,” cco.dodlive.mil/files/2014/04/Strategic\_Terrorism\_corrected\_II.pdf)

Technology contains no inherent moral directive—it empowers people, whatever their intent, good or evil. This has always been true: when bronze implements supplanted those made of stone, the ancient world got scythes and awls, but also swords and battle-axes. The novelty of our present situation is that modern technology can provide small groups of people with much greater lethality than ever before. We now have to worry that private parties might gain access to weapons that are as destructive as—or possibly even more destructive than— those held by any nation-state. A handful of people, perhaps **even a single individual, could have the ability to kill** millions or even **billions**. Indeed, it is possible, from a technological standpoint, to kill every man, woman, and child on earth. The gravity of the situation is so extreme that getting the concept across without seeming silly or alarmist is challenging. Just thinking about the subject with any degree of seriousness numbs the mind. The goal of this essay is to present the case for making the needed changes before such a catastrophe occurs. The issues described here are too important to ignore. Failing nation-states—like North Korea—which possess nuclear weapons potentially pose a nuclear threat. Each new entrant to the nuclear club increases the possibility this will happen, but this problem is an old one, and one that existing diplomatic and military structures aim to manage. The newer and less understood danger arises from the increasing likelihood that stateless groups, bent on terrorism, will gain access to nuclear weapons, most likely by theft from a nation-state. Should this happen, the danger we now perceive to be coming from rogue states will pale in comparison. **The ultimate response to a nuclear attack is a nuclear counterattack**. Nation states have an address, and they know that we will retaliate in kind. Stateless groups are much more difficult to find which makes a nuclear counterattack virtually impossible. As a result, they can strike without fear of overwhelming retaliation, and thus they wield much more effective destructive power. Indeed, in many cases the fundamental equation of retaliation has become reversed. Terrorists often hope to provoke reprisal attacks on their own people, swaying popular opinion in their favor. The aftermath of 9/11 is a case in point. While it seems likely that Osama bin Laden and his henchmen hoped for a massive overreaction from the United States, it is unlikely his Taliban hosts anticipated the U.S. would go so far as to invade Afghanistan. Yes, al-Qaeda lost its host state and some personnel. The damage slowed the organization down but did not destroy it. Instead, the stateless al-Qaeda survived and adapted. The United States can claim some success against al-Qaeda in the years since 9/11, but it has hardly delivered a deathblow. Eventually, the world will recognize that stateless groups are more powerful than nation-states because terrorists can wield weapons and mount assaults that no nationstate would dare to attempt. So far, they have limited themselves to dramatic tactical terrorism: events such as 9/11, the butchering of Russian schoolchildren, decapitations broadcast over the internet, and bombings in major cities. Strategic objectives cannot be far behind.

# Growth Module

## Defense

### No War

#### Economic downturns don’t cause conflict---stats prove

Christopher Clary 15, Ph.D. in Political Science from MIT, Postdoctoral Fellow, Watson Institute for International Studies, Brown University, “Economic Stress and International Cooperation: Evidence from International Rivalries,” April 22, 2015, http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2597712

Do economic downturns generate pressure for diversionary conflict? Or might downturns encourage austerity and economizing behavior in foreign policy? This paper provides new evidence that economic stress is associated with conciliatory policies between strategic rivals. For states that view each other as military threats, the biggest step possible toward bilateral cooperation is to terminate the rivalry by taking political steps to manage the competition. Drawing on data from 109 distinct rival dyads since 1950, 67 of which terminated, the evidence suggests rivalries were approximately twice as likely to terminate during economic downturns than they were during periods of economic normalcy. This is true controlling for all of the main alternative explanations for peaceful relations between foes (democratic status, nuclear weapons possession, capability imbalance, common enemies, and international systemic changes), as well as many other possible confounding variables. This research questions existing theories claiming that economic downturns are associated with diversionary war, and instead argues that in certain circumstances peace may result from economic troubles.

#### Econ Collapse doesn’t cause war

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(Christopher, “Economic Stress and International Cooperation: Evidence from International Rivalries”, 4/25/15, <http://poseidon01.ssrn.com/delivery.php?ID=719105092024097121124100018083011118038069081083039091121092126090087109098065027066123029119022059121027020065094083094082064017078060077029075100073095001126072113085042032004073009085104092002020027086072104017023079122098123108013079003000082124078&EXT=pdf>, MIT political science department)

I define a rivalry as the perception by national elites of two states that the other state possesses conflicting interests and presents a military threat of sufficient severity that future military conflict is likely. Rivalry termination is the transition from a state of rivalry to one where conflicts of interest are not viewed as being so severe as to provoke interstate conflict and/or where a mutual recognition of the imbalance in military capabilities makes conflict-causing bargaining failures unlikely. In other words, rivalries terminate when the elites assess that the risks of military conflict between rivals has been reduced dramatically. This definition draws on a growing quantitative literature most closely associated with the research programs of William Thompson, J. Joseph Hewitt, and James P. Klein, Gary Goertz, and Paul F. Diehl.1 My definition conforms to that of William Thompson. In work with Karen Rasler, they define rivalries as situations in which “[b]oth actors view each other as a significant politicalmilitary threat and, therefore, an enemy.”2 In other work, Thompson writing with Michael Colaresi, explains further: The presumption is that decisionmakers explicitly identify who they think are their foreign enemies. They orient their military preparations and foreign policies toward meeting their threats. They assure their constituents that they will not let their adversaries take advantage. Usually, these activities are done in public. Hence, we should be able to follow the explicit cues in decisionmaker utterances and writings, as well as in the descriptive political histories written about the foreign policies of specific countries.3 Drawing from available records and histories, Thompson and David Dreyer have generated a universe of strategic rivalries from 1494 to 2010 that serves as the basis for this project’s empirical analysis.4 This project measures rivalry termination as occurring on the last year that Thompson and Dreyer record the existence of a rivalry. Economic crises lead to conciliatory behavior through five primary channels. (1) Economic crises lead to austerity pressures, which in turn incent leaders to search for ways to cut defense expenditures. (2) Economic crises also encourage strategic reassessment, so that leaders can argue to their peers and their publics that defense spending can be arrested without endangering the state. This can lead to threat deflation, where elites attempt to downplay the seriousness of the threat posed by a former rival. (3) If a state faces multiple threats, economic crises provoke elites to consider threat prioritization, a process that is postponed during periods of economic normalcy. (4) Economic crises increase the political and economic benefit from international economic cooperation. Leaders seek foreign aid, enhanced trade, and increased investment from abroad during periods of economic trouble. This search is made easier if tensions are reduced with historic rivals. (5) Finally, during crises, elites are more prone to select leaders who are perceived as capable of resolving economic difficulties, permitting the emergence of leaders who hold heterodox foreign policy views. Collectively, these mechanisms make it much more likely that a leader will prefer conciliatory policies compared to during periods of economic normalcy. This section reviews this causal logic in greater detail, while also providing historical examples that these mechanisms recur in practice. Economic Crisis Leads to Austerity Economic crises generate pressure for austerity. Government revenues are a function of national economic production, so that when production diminishes through recession, revenues available for expenditure also diminish. Planning almost invariably assumes growth rather than contraction, so the deviation in available revenues compared to the planned expenditure can be sizable. When growth slowdowns are prolonged, the cumulative departure from planning targets can grow even further, even if no single quarter meets the technical definition of recession. Pressures for austerity are felt most acutely in governments that face difficulty borrowing to finance deficit expenditures. This is especially the case when this borrowing relies on international sources of credit. Even for states that can borrow, however, intellectual attachment to balanced budgets as a means to restore confidence—a belief in what is sometimes called “expansionary austerity”—generates incentives to curtail expenditure. These incentives to cut occur precisely when populations are experiencing economic hardship, making reductions especially painful that target poverty alleviation, welfare programs, or economic subsidies. As a result, mass and elite constituents strongly resist such cuts. Welfare programs and other forms of public spending may be especially susceptible to a policy “ratchet effect,” where people are very reluctant to forego benefits once they have become accustomed to their availability.6 As Paul Pierson has argued, “The politics [of welfare state] retrenchment is typically treacherous, because it imposes tangible losses on concentrated groups of voters in return for diffuse and uncertain gains.”7 Austerity Leads to Cutbacks in Defense Spending At a minimum, the political costs of pursuing austerity through cutbacks in social and economic expenditures alone make such a path unappealing. In practice, this can spur policymakers to curtail national security spending as a way to balance budgets during periods of economic turmoil. There is often more discretion over defense spending than over other areas in the budget, and it is frequently distantly connected to the welfare of the mass public. Many militaries need foreign arms and foreign ammunition for their militaries, so defense expenditures are doubly costly since they both take up valuable defense budget space while also sending hard currency overseas, rather than constituencies at home. Pursuing defense cuts may also conform to the preferences of the financial sector, which shows a strong aversion to military conflict even if that means policies of appeasement and conciliation.8 During periods of economic expansion, the opportunity costs associated with defense expenditure—the requirement for higher taxes or foregone spending in other areas—are real but acceptable. Economic contraction heightens the opportunity costs by forcing a choice between different types of spending. There is a constituency for defense spending in the armed services, intelligence agencies, and arms industries, but even in militarized economies this constituency tends to be numerically much smaller than those that favor social and economic expenditures over military ones. Defense Cutbacks Encourage Rapprochement An interest in defense cutbacks can lead to conciliatory behavior through two paths. First, the cutbacks themselves serve as a concrete signal to adversaries that the military threat posed by the economically distressed state is declining. This permits the other state to halt that portion of defense spending dedicated to keeping up, breaking the back of ongoing arms races through reciprocated, but non-negotiated moves. Unilateral conventional force reductions were a major element of Gorbachev’s foreign policy in the late 1980s, alongside negotiated strategic arms control, and diplomatic efforts to achieve political understandings with the United States.9 Gorbachev similarly used force reductions in Afghanistan, Mongolia, and the Soviet Far East to signal to China in 1987 that he was serious about political negotiations.10 Elsewhere, non-negotiated, tit-for-tat military redeployments facilitated Argentina-Brazil rapprochement.11 Second, leaders may believe cutbacks are necessary, but would be dangerous in the absence of negotiated improvements with traditional foes. Economic downturns can serve as motivation to pursue arms control or political settlement. During periods of normalcy, such outcomes would be positives, but are viewed as “too hard” by political leaders that move from one urgent problem to the next. During periods of economic crisis, however, arms control or political improvements might allow for much needed cuts in defense spending, and are pursued with greater vigor. The Johnson administration attempted both unilateral and negotiated arms limitations because of budgetary concerns as President Johnson and Secretary McNamara struggled to pay for the “Great Society” domestic programs and the increasingly costly Vietnam War. They first attempted unilateral “caps” on costly nuclear forces and anti-ballistic missile defenses and when this failed to lead to a reciprocal Soviet response they engaged in formal arms control talks. Détente continued in the Nixon administration, accelerating in 1971 and 1972, simultaneous with rising budget deficits and inflation so serious that Nixon instituted price controls. Nixon’s decision to sharply limit anti-ballistic missile defenses to enable arms control talks was contrary to his strategic views, but necessitated by a difficult budgetary environment that made paying for more missile defense emplacements unrealistic.12 As Nixon told his national security advisor Kissinger in an April 1972 discussion of ballistic missile and anti-ballistic missile developments: “You know we've got a hell of a budget problem. We've got to cut it down, we've got to cut 5 billion dollars off next year's defense budget. So, I don't want to [inaudible: do it?] unless we've got some settlement with the Russians.”13 In practice, unilateral defense cuts and force reductions are frequently combined with negotiated political agreements in a sequential, iterative fashion, where a unilateral reduction will signal seriousness that opens the way for political agreement, which in turn permits even deeper reductions. Defense cuts and force reductions are not only a means to achieve rivalry termination, but also a goal in and of themselves that rivalry termination helps secure. Leaders are seeking resources from defense they can use elsewhere. Thus when Argentine leader Raul Alfonsín campaigned for the need for drastic budgetary austerity, his specific “platform was the reduction of military spending to use it for the other ministries, connected with the concept of eliminating the hypothesis of conflict” with Argentinian rivals, according to Adalberto Rodríguez Giavarini, who served in Alfonsín’s ministry of defense (and later was Argentina’s foreign minister).14 Similarly, Gorbachev was motivated to reduce arms in the late 1980s because he determined it was necessary to cut Soviet defense spending and defense production, and repurpose part of the defense industry to make consumer and civilian capital goods, according to contemporary U.S. Central Intelligence Agency classified assessments.15 Thus the “main reason” why strategic arms control breakthroughs occurred from 1986 to 1988 and the Soviet Afghan intervention concluded in 1989 was a realization within the Politburo of “excessively high expenditures on defense,” according to Nikolai Ryzhkov, Gorbachev’s prime minister.16 Economic Downturns Provoke Strategic Reassessment: Threat Deflation and Prioritization Economic downturns encourage leaders to seek new ideas to use to frame their policy problems. During periods of economic difficulty, elites can come to realize that their problems are not amenable to old solutions, and search for new ideas.17 During an economic crisis, politics and policy are “more fluid,” as old answers seem stale and insufficient.18 An ideational entrepreneur that can link economic lemons to foreign policy lemonade can find a patron when leaders are casting about for ways to reframe the world in acceptable ways to their peers and publics. The behavior of an old foe is often ambiguous, and can be viewed as either injurious to one’s interests or neutral toward them. During periods of normalcy, the motivation of defense establishments is tilted toward threat and danger. During periods of economic crisis, national leaders have a counteracting motivation to downplay such dangers, so that the threats faced by a nation are manageable through available resources. Economic difficulties provide a motivation for leaders to view equivocal signals from the international system in a way that is benign. To the extent that rivalries are perpetuated because of threat inflation, economic downturns provide incentives to deflate the threat, potentially disrupting cycles of competition and enmity. South Korean president Kim Dae-jong came to power in the aftermath of the 1998 Asian economic crisis, pursued a “sunshine policy” toward the North, cut South Korean defense spending in nominal and real terms, and pursued a policy toward North Korea that political scientist Dong Sun Lee called “threat deflation” despite the growing North Korean nuclear weapons threat.19 Economic crises can also spur strategic reassessment through another channel. If leaders view economic problems as structural, rather than a temporary gale, they may come to question whether available national resources are sufficient to confront all of the national threats identified in the past. This creates incentives to economize threats, seeking political settlements where possible in order to focus remaining resources on competitions that can be won. A concrete example: in 1904, the chancellor to the Exchequer wrote his cabinet colleagues: “[W]e must frankly admit that the financial resources of the United Kingdom are inadequate to do all that we should desire in the matter of Imperial defense.”20 The result was a British decision to minimize political disagreement with the United States and focus on other defense challenges. While such a decision is in line with realist advice, it occurred not when the power trajectories were evident to British decisionmakers but when the budget situation had reached a crisis that could no longer be ignored. Economic Downturns Increase Incentives for International Economic Cooperation Economic downturns not only create incentives to cut spending, they encourage vigorous pursuit of opportunities for economic cooperation. This, too, can engender conciliatory behavior. Economic downturns can increase motives to pursue trade and investment. Rivalries with old foes often directly impinge on trade and investment with the adversary and may indirectly impinge on trade and investment with third parties, especially if the rivalry is viewed as being likely to generate disruptive military conflict. Additionally, economic aid is sometimes used as an inducement for adversaries to set aside a political dispute. This aid can either serve as a side payment from one rival to another, or it can be offered by a third party to one or both rivals as an incentive to set aside lingering disputes. Such aid is more attractive during periods of economic turmoil than during periods of comparative normalcy. In South Asia, India and Pakistan struggled from 1947 to 1960 with how to manage water resources in the Indus Rivers basin, inheriting a canal system meant to service pre-partitioned India. Pakistan, suffering an economic downturn, and India, reliant on foreign aid to avert economic crisis, agreed to an Indus Waters Treaty in 1960 to resolve the lingering dispute, made possible in substantial part because of World Bank financing that was especially attractive to the struggling economies. In the Middle East, Egypt and Israel made the hard choices necessary for the Camp David accord in 1979 precisely because the Sadat and Begin governments faced difficult economic situations at home that made the U.S. aid guarantee in exchange for a peace agreement especially attractive.21 In 1982, the Yemen’s People’s Republic agreed to stop its attempts to destabilize Oman, because otherwise Yemen would not receive economic assistance from Arab oil producing states that it desperately needed.22 In the late 1990s, El Niño-induced flooding devastated Ecuador and Peru, spurring reconciliation as leaders sought to increase trade, secure investment, and slash military expenditures so they could be used at home.23 As one Western diplomat assessed at the time, Ecuador and Peru “have decided it's better to see reason…. They see foreign companies eager to invest in South America, and if Peru and Ecuador are in conflict, it makes them less attractive than, say, Argentina or Brazil or Chile for investment purposes. That's the last thing either country wants.”24 Economic Downturns Can Cause Meaningful Leadership Change The above mechanisms have identified how economic difficulties can alter the preferences of an incumbent leader. Additionally, economic crises can lead to leadership turnover and, during periods of difficulty, the selection process that determines new leadership can loosen ideological strictures that relate to extant rivalries. Leaders may be selected based on judgments about their ability to cope with economic problems, with greater elite acceptance of ideological heterogeneity in foreign policy beliefs than in periods of normalcy.25 In Stephen Brooks and William Wohlforth’s words, “If everything is going well or is stable, then why select leaders who might subvert the triedand-true identity? But if that identity is leading to increased material difficulties, pressure for change will likely mount. In these circumstances, those who are willing to alter or adjust the hallowed precepts of the existing identity and its associated practices are more likely to assume power.”26 Economic crisis, then, can spur incumbent leaders to either abandon the “baggage” of rivalry or facilitate the selection of new leaders that do not carry such baggage. The most well-known example of an incumbent selectorate looking for a reformer, even one without much foreign policy experience, involves Mikhail Gorbachev’s ascension to the Soviet premiership. In political scientist Jerry Hough’s words, “If the rate of economic growth continued to decline, if administrative and labor efficiency continued to fall, if corruption was not punished, these conditions would have dangerous consequences for the [Soviet Union in the] 1980s and 1990s…. Gorbachev’s promotion was an answer to these concerns.”27

#### No impact—global econ’s resilient, no protectionism or conflict from decline—aggregate data concludes

**Drezner 14**—professor of international politics at the Fletcher School of Law and Diplomacy at Tufts University

(Daniel, “The System Worked: Global Economic Governance during the Great Recession”, World Politics / Volume 66 / Issue 01 / January 2014, pp 123-164, dml)

The final significant outcome addresses a dog that hasn’t barked: the effect of the Great Recession on cross-border conflict and violence. During the initial stages of the crisis, multiple analysts asserted that the financial crisis would lead states to increase their use of force as a tool for staying in power.42 They voiced genuine concern that the global economic downturn would lead to an increase in conflict—whether through greater internal repression, diversionary wars, arms races, or a ratcheting up of great power conflict. Violence in the Middle East, border disputes in the South China Sea, and even the disruptions of the Occupy movement fueled impressions of a surge in global public disorder.

The aggregate data suggest otherwise, however. The Institute for Economics and Peace has concluded that “the average level of peacefulness in 2012 is approximately the same as it was in 2007.”43 Interstate violence in particular has declined since the start of the financial crisis, as have military expenditures in most sampled countries. Other studies confirm that the Great Recession has not triggered any increase in violent conflict, as Lotta Themnér and Peter Wallensteen conclude: “[T]he pattern is one of relative stability when we consider the trend for the past five years.”44 The secular decline in violence that started with the end of the Cold War has not been reversed. Rogers Brubaker observes that “the crisis has not to date generated the surge in protectionist nationalism or ethnic exclusion that might have been expected.”45

### No Spillover

**Econ’s resilient – shocks don’t spill over**

**Posen, 16** – Adam S. Posen, president of the Peterson Institute for International Economics and external voting member of the Bank of England’s rate-setting Monetary Policy Committee, “Chapter 1: Why We Need a Reality Check”, REALITY CHECK FOR THE GLOBAL ECONOMY, Peterson Institute for International Economics, PIIE Briefing 16-3, March 2016

A combination of public policies and decentralized private-sector responses to the crisis have **increased** our **economic resilience**, diminished the **systemic spillovers between economies**, and even created some room for **additional stimulus** if needed. Large parts of the global financial system are better capitalized, monitored, and frankly more risk averse than they were a decade ago, with less leverage. The riskier parts of today’s global economy are less directly linked to the center’s growth and financing than when the troubles were within the United States and most of Europe in 2008. Trade imbalances of many key economies are smaller, though growing, and thus accumulations of foreign debt vulnerabilities are also smaller than a decade ago. Most central banks are now **so committed to stabilization** that they are attacked for being too loose or supportive of markets, making them at least unlikely to repeat some policy errors from 2007–10 of delaying loosening or even excessive tightening. Finally, corporate and household balance sheets are far more solid in the US and some other major economies than they were a decade ago (though not universally), and even in China the perceptions of balance sheet weakness exceed the reality in scope and scale.

**U.S. not key to global econ health**

**Molavi 11 –** Afshin Molavi, Senior Fellow and Co-Director of the World Economic Roundtable at the New America Foundation, “US Economic Power is Part of a Healthier Global Order”, The National, 7-4, http://www.thenational.ae/thenationalconversation/comment/us-economic-power-is-part-of-a-healthier-global-order#full

Thus, the world faces the prospect of America slipping quietly into a "lost decade" of sluggish growth - of America sneezing and wheezing and coughing, but not facing a crisis moment. What will this mean for the world? Japan's growth throughout the 1970s and 1980s bolstered many of their Asian trading partners. Japan's demand was a boon. But Japan's lost decade in the 1990s did not stop the Asian tigers from rising. In some cases, countries such as South Korea and Taiwan even benefited from the Japanese slowdown, stealing away market share in key industries. The same may happen with an American "lost decade". A World Bank report in late 2009 noted that Latin American countries - the most exposed to American contagion - did not feel severe effects from the American crisis. The same goes for other emerging markets. So, perhaps **the world will shrug off a steady American economic decline** over the next five years. This is partly because the global economic pie is not a fixed size. As "the rest" rise, it grows. Thus, America controlled a quarter of the world's GDP in 1970 - roughly the same as today. But the pie is much bigger. **Global GDP has tripled since 1970 and Asia today accounts for a quarter of global GDP**. The pie is not only larger, but it is **more balanced**. Will there even be a "lost decade" after all? American corporations are sitting on large piles of cash. The problems with the economy have as much (perhaps more) to do with business confidence as with fundamentals. That could change. To be sure, the world is better off when America grows and produces and innovates. But if the declinists prove correct, then the cliché of "when American sneezes" will truly be tested once and for all. Or perhaps the world will be too busy to notice: emerging markets will be growing their middle classes, oil-rich Middle East states will be bolstering ties to Asia, and Chinese investments will flow across Africa and Latin America. And that sneezing $14 trillion (Dh51.4 trillion) economy would still be the envy of most countries around the world. We can put the cliché to rest: **an American sneeze might not breed a global cold after all**.

## Dedev

### Warming

#### Growth ensures 2 degree warming and extinction

**Trainer 13** (Ted, conjoint lecturer in the School of Social Sciences at the University of New South Wales in Australia, “Why a consumer society can't fix the climate,” 11/4, <http://thebulletin.org/why-consumer-society-cant-fix-climate>) – highlighting – sean!

Policy makers throughout the industrialized world generally assume that humankind can solve serious global problems by adopting better technologies and regulations—without questioning the viability of consumer-capitalist societies. This faith is mistaken. The big problems, particularly climate change, are so serious that they cannot be solved without unprecedented and extremely radical change, including abandoning the obsession with economic growth, market systems, and high living standards. The fundamental cause of the global problems threatening humanity is a grossly **unsustainable** level of over-consumption. The per-capita rates at which people living in rich countries are using up resources are far beyond levels that can be kept up for long or that could be extended to all the world’s nations. Yet most people fail to grasp the magnitude of the overshoot or its significance. The reductions required are so big that they cannot possibly be achieved within a consumer-capitalist society. Among the factors that policy makers are ignoring are standards of living, available land, carbon emissions, and economic growth. Living standards. Many resources are already alarmingly scarce, yet a minority of the world’s people are currently using the majority of these resources. If the standard of living in countries such as Australia and the United States were to be extended to the entire world’s population, which is expected to top 9 billion by 2050, production rates for most resources would have to be 7 to 10 times as great as they are now. Land availability. The per-capita area of productive land needed to supply one Australian with food, water, settlements, and energy is about seven hectares (or 17 acres), according to ecological footprint data published by the World Wildlife Federation in 2012. But when the world population reaches 9 billion, the per capita area of productive land available worldwide will be less than 0.8 hectare. In other words, the Australian “footprint” is already nine times as big as that which will be possible for all. Carbon emissions. In the four years since a team of European scientists warned that burning only half of the world’s proven, economically recoverable fossil fuel reserves would push temperatures well beyond the danger level, global emissions have only continued to rise. The Intergovernmental Panel on Climate Change’s recent fifth report says that to have a reasonable chance of keeping global temperature rise **below 2 degrees**Celsius **we must reduce** net anthropogenic **emissions to zero**well before 2050. Despite rosy projections for running the world on renewable energy alone, my analysis shows, in detail, that replacing fossil fuels with **renewable energy**sources **would not be affordable** because of the built-in redundancy and energy-storage capability that would be required. Economic growth. These kinds of figures show that major global problems cannot be solved unless the wealthiest countries face up to enormous reductions in per-capita resource use. However, these countries are obsessed with raising levels of production and consumption as fast as possible, and without any upper limit. The supreme, never-questioned goal is continuous economic growth. But for the world’s population to achieve Australian living standards by 2050, given an annual economic growth rate of 3 percent, total world production and consumption would have to be more than 30 times as great in 2050 as they are now. In addition to the problem of unsustainable resource and ecological impacts, there is the extremely unjust nature of the global economy. It operates mainly according to market principles, which means that scarce goods go to those who can pay most for them, rather than to those in greatest need. Even more important, in a market economy what is developed is what is most profitable in the market, not what is most needed. So the “development” that takes place in the Third World is mostly of industries that benefit corporations and rich-world consumers, rather than the billions of people living in poverty. Simply put, it is not possible to have a just and sustainable consumer-capitalist society that provides all people with increasingly affluent lifestyles. Unless the fundamental structures and systems of modern society are scrapped and replaced, the problems they are causing cannot be solved.

#### Extinction.

**Ruiter 17** [Zach Ruiter [correspondent for Now Toronto]. “Are we headed for near-term human extinction?” November 22, 2017. Accessed February 17, 2018. https://nowtoronto.com/news/are-we-headed-for-near-term-human-extinction/]

According to scientists**, the majority of previous mass extinctions** in the geologic record **were characterized by abrupt warming between 6 to 7 degrees** Celsius. As recently as 2009, British government **scientists warn**ed of **a possible catastrophic 4 degree**s Celsius global temperature **increase by 2060**. As Howard Lee wrote in the Guardian in August, “Geologically fast build-up of greenhouse gas linked to warming, rising sea-levels, widespread oxygen-starved ocean dead zones and ocean acidification are fairly consistent across the mass extinction events, and those same symptoms are happening today as a result of human-driven climate change.” Runaway **climate change is non-linear. Shifts can be exponential, abrupt and massive** due to climate change “feedbacks,” which can amplify and diminish the effects of climate change. Here are five you need to know about: 1. Climate lag **Temperature increases lag by about a decade**, according to NASA’s Earth Observatory. “Just as a speeding car can take some time to stop after the driver hits the brakes, the earth’s climate systems may take a while to reflect the change in its energy balance.” According to a NASA-led study released in July 2016, “Almost **one-fifth of the global warming that has occurred in the past 150 years has been missed by historical records** due to quirks in how temperatures were recorded.” **Adding the climate lag to the current level of** global temperature **increase would take us past the 2 degree** Paris Agreement climate **target within a decade.** 2. Ice-free Arctic Dr. Peter Wadhams of the Polar Ocean Physics Group at Cambridge University told The Independent more than a year ago that **the central part of the Arctic** and the North Pole **could be ice-free within** one to two **years.** Not only will **melting Arctic sea ice** raise global sea levels, it **will also allow the earth to absorb more heat** from the sun because ice reflects the sun’s rays while blue open water absorbs it. One study in the Proceedings Of The National Academy Of Sciences Of The United States Of America estimates the extra heat absorbed by the dark waters of the Arctic in summer would add the equivalent of another 25 per cent to global greenhouse gas emissions. 3. The 50 gigaton methane “burp” Dr. Natalia Shakhova, of the University of Alaska Fairbanks’ International Arctic Research Center has warned that **a 50-gigaton burp, or “pulse,” of methane from thawing Arctic permafrost** beneath the East Siberian Arctic Shelf **is “highly possible** at any time.” Methane is a greenhouse gas much more potent than carbon dioxide. **A 50 gigaton burp would be the equivalent of roughly two-thirds of the total carbon dioxide released since the** beginning of the **industrial era**. 4. Accelerated ocean acidification The world’s oceans are carbon sinks that sequester a third of the carbon dioxide released into the atmosphere. The carbon dioxide emitted in addition to that which is produced naturally has changed the chemistry of seawater. The **carbon in the oceans converts into carbonic acid, which lowers pH levels** and makes the water acidic. As of 2010, **the global population of phytoplankton**, the microscopic organisms that form the basis of the ocean’s food web, **has fallen by about 40 per cent** since 1950. **Phytoplankton also absorb carbon dioxide and produce half of the world’s oxygen output**. The accelerating loss of ocean biodiversity and continued overfishing may result in a collapse of all species of wild seafood by 2048, according to a 2006 study published in the journal Science. 5. From global warming to global dimming The Canadian government recently announced plans to phase out coal-fired electricity generation by 2030. But at the same time as warming the planet, pollution from coal power plants, airplanes and other sources of industrial soot, aerosols and sulfates are artificially cooling the planet by filling the atmosphere with reflective particles, a process known as global dimming. Airplanes, for example, release condensation trails (or contrails) that form cloud cover that reflects the sun. The effects of global dimming are best evidenced by a 2 degree Celsius temperature increase in North America after all commercial flights were grounded for three days following the attacks of 9/11. The take-away Out of control climate change means **feedback mechanisms may accelerate beyond any capacity of human control**. **The occurrences discussed in this article are five of some 60 known** weather-related phenomenon, **which can lead to** what climate scientist James Hansen has termed the **“Venus Syndrome,” where oceans would boil and the** surface temperature of **earth could reach 462 degrees** Celsius. Along the way humans could expect to die in **resource wars, starvation** due to food systems collapse **or lethal heat exposure**. Given all that remains unknown and what is at stake with climate change, is it irresponsible to rule out the possibility of **human extinction in the coming decades** or sooner?

#### Growth is unsustainable and will inevitably result in several environmental and economic crises – only transitioning can solve.

**Trainer ’18** (Ted; is a Conjoint Lecturer in the School of Social Sciences, University of New South Wales. PhD from University of Sydney; March 3rd; *The Global Situation, The Sustainable Alternative Society, and The Transition to It*; <http://thesimplerway.info/TSWMain.htm>; accessed 1/9/19; MSCOTT)

Fault 1: THE LIMITS TO GROWTH The most serious **fault** in our society is the commitment to an affluent-industrial-consumer lifestyle and to an economy that must have constant and limitless growth in output. **Our way of life is grossly unsustainable**. Our levels of production and consumption are far too high to be kept up for very long and could never be extended to all people. We are rapidly depleting resources and damaging the environment. Following are some of the main points that support these ‘limits to growth” conclusions. (For a detailed case see TSW, 2018a.) **Rich countries**, with about one-fifth of the world’s people, are consuming about three quarters of the world’s resource production. Our per capita consumption is about 15+ times that of the poorest half of the world’s people. World population will probably reach 9 - **10 billion**, somewhere after 2050. If all those people were to have the present Australian per capita resource consumption, then world production of all resources would have to be about **6 times as great as it is now**. If we tried to raise present world production to that level by 2050 we would by then have **completely exhausted all probably recoverable resources** of one third of the basic mineral items we use. All probably recoverable resources of **coal**, **oil**, **gas**, **tar sand** and **shale oil**, and **uranium** (via burner reactors) would have been **exhausted before 2050**. Resources are becoming **scarcer** and **more costly**, including energy, **minerals**, **food**, **fish**, **water** and **timber**. (Heinberg, 2008.) **Petroleum** appears to be **especially limited**. Supply of conventional crude has probably **peaked**. Investment in oil production has trebled in about a decade, but the amount produced has not increased. The current boom in gas from **fracking is likely to be over in a decade** as wells have been found to decline rapidly. (Ahmed, 2014.) Petroleum is the **most urgent limit** to affluence and growth. It is difficult to see how we can avoid an **extremely disruptive decline** within the next two decades. This would cause catastrophic change in all aspects of consumer society, making travel, transport, trade, tourism, agriculture, etc. very costly and eliminating many activities. If 9 billion people were to use timber at the rich world per capita rate we would need **3.5 times the world's present forest area**. If all 9 billion were to have a rich world diet, which takes about .5 ha of land to produce, we would need 4.5 billion ha of food producing land. But there are only 1.4 billion ha of cropland in use today and this is likely to decrease because **land is being lost**. Ecological resources are being severely depleted. We are losing species, forests, land, coral reefs, grasslands and fisheries at accelerating rates. **Water shortages** are serious and increasing. There are already **food shortages** causing riots in several countries. **Phosphorus** is a worry; supplies might only **last two decades**. Several minerals are becoming quite scarce, including **platinum**, **hafnium**, **indium**, **gallium**, and **copper** and **zinc**. **Helium gas** is also a problem. Virtually all mineral ore grades are falling, deposits are becoming fewer, smaller and less accessible meaning more energy is needed to produce each tonne. The top ten iron ore and bauxite consuming nations have per capita use that is around 65 and 90 times respectively the rates for all the other nations. (Weidmann et al., 2014.) There is obviously no possibility of all people ever rising to anything like present rich world levels of mineral use. Ecological "Footprint" analysis estimates that it takes about 8 ha of productive land to provide water, energy settlement area and food for one person living in Australia. So if 9 billion people were to live as we do in Sydney we would need about 72 billion ha of productive land. But that is about 9 times all the available productive land on the planet. Even now footprint analyses indicate that the world is consuming resources at 1.5 times a sustainable rate. We are doing it by running down the stocks, e.g., we are using forest products faster than forest regrowth could make them available continually, by cutting down the forests. More worrying than the resource limits are the ecological limits. We are seriously damaging the life support systems of the planet, the biological and chemical processes that maintain the conditions all living things need. The World Wildlife Fund says that in general the quality of global ecosystems has deteriorated 30% since about 1970. Among the most worrying ecological problems are, Atmosphere and Climate. Our rate of release of **carbon dioxide** to the atmosphere is set to cause **catastrophic problems** in coming years. There is considerable agreement among climate scientists that we should eliminate all emissions by 2050. There is a strong case that it **will not be possible to do this while maintaining consumer-capitalist society**. Firstly it will not be possible to burn coal and **sequester** the resulting CO2 because only 80-90% of it in power station emissions can be captured for storage, and because the **50% of emissions** from non-stationary sources such as cars **cannot be captured**. Secondly there is a strong case that it **will not be possible to substitute alternative energy sources** for carbon emitting fuels on the scale required. (See below.) The finding by Meinshausen et al. (2009) is widely accepted: for a 75% probability of limiting global warming to 2 degree cumulative CO2 emissions in the period 2000 – 2050 must be less than 1000 GT CO2. Between 2000 and 2010 around 350 GT had been emitted, so the remaining capacity is only 650 GT. Emissions around 2013 were almost 50 GT/y, and increasing. So we have **less than 13 years at this rate** to completely eliminate emissions. But in some **recent years the emission rate has increased** at 3% p.a. (Sorrell, 2012, p.1796. See also Anderson and Bows, 2008.) The Australian per capita emission rate is about the worst in the world … not including imports and exports. In 2004 Australia produced 525 million tonnes of CO2…but in addition the amount in the fuels we exported was 565 million tonnes. To this should be added the carbon emissions created to produce the goods we imported. (Chateau, et al., 2011.) Donald, (2012), found that for the UK carbon in imports was as much as was released domestically. The **depleted ozone layer** is another atmospheric concern. **Biodiversity loss**. We are **eliminating species at an alarming rate**, and seem to be entering a period of massive loss of species, a **sixth era of mass extinction**. The main reason is **loss of habitat**; humans are taking more and more of nature and damaging the rest. **Chemical imbalances and toxicity**. We are **releasing such quantities of many chemicals that the planet’s natural cycles are being disrupted and poisoned**. For instance the huge amount of **artificial nitrogen** entering the environment from fertilizers is causing algal blooms etc. The **phosphorus** cycle is also a concern, also due to the **large amounts released in fertilizers**. Soils are increasingly **acidic** due to artificial fertilizers, and soil carbon levels have been depleted by farming. The **seas are becoming more acidic**, threatening all the organisms with shells. Crib (2014) reports 8% of human deaths are due to poisoning. Vast amounts of plastic are accumulating in the oceans. The reason for all this massive damage to the environment is simply that **there is far too much producing and consuming going on**. This is causing too many resources to be taken from nature and too many wastes to be dumped back into nature. How much will be left for nature if 9 billion rise to live like Americans? These have been some of the main limits to growth arguments which lead to the conclusion that there is no possibility of all people rising to the living standards we take for granted today in rich countries like Australia. The most important point is the **magnitude of the overshoot**. Most people have no idea of how **far beyond sustainable levels of consumption we are**, and **how big the reductions will have to be**. We seem to be around **10 times over some crucial limits**. It is difficult to see how anyone could avoid the conclusion that we should be trying move to far simpler and less resource-expensive lifestyles and systems. The necessary reductions cannot be achieved without **dramatic reductions** in the amount of production and consumption and therefore **economic activity** going on. These limits problems are very **likely to begin to hit us hard in the next decade**, as **petroleum becomes more scarce** and the effects spread through the whole economy. Few people grasp the seriousness of the situation, certainly not within mainstream political, media and academic circles or within the general public. Now add the **absurdly impossible implications of economic growth**. But the foregoing argument has only been that the **present levels of production and consumption are quite unsustainable**. Yet we are determined to increase present living standards and levels of output and consumption, as much as possible and **without any end in sight**. In other words, our supreme national goal is economic growth. Few people seem to recognise the **absurdly impossible consequences of pursing economic growth**. World **GDP is expected to multiply by four by 2050**. (Chateau, J., et al., 2011.) If we Australians have a 3% p.a. increase in output, by 2090 we will be producing 8 times as much every year. If by then all 9 billion people expected had risen to the living standards we would have then, the **total world economic output would be more than 60 times as great as it is today**! Yet **the present level is unsustainable**. COUNTER ARGUMENTS? “De-materialisation”,” **De-coupling**”, the shift to information and services? It is often argued that the economy can continue to grow in the service and information sectors, without increasing use of materials and energy. This is also known as the “de-materialisation” or “de-coupling” thesis. It is now clear that **this is not what is happening**. Over the last thirty years growth in economic output has been **accompanied by increase in use of materials and energy**, not decrease, let alone by anything like the **dramatic reduction required**. (Alexander, 2014, TSW, 2018b.) But can’t technical advance solve the problems? Most people are "**technical fix optimists**", assuming that technical advance will make it unnecessary for us to change to simpler lifestyles and very different systems such as a zero-growth economy. They believe that smarter technology and more recycling, greater energy efficiency, etc., will enable growth of GDP and higher "living standards" with reduced total resource use and environmental impact. There are miraculous technical advances in many fields all the time, but the de-coupling evidence is that they are not enabling reductions in overall resource demands or environmental impacts. Note that if there is a commitment to constant, limitless increase in economic output then reductions that can be achieved by **technical advance are soon likely to be overwhelmed**. For instance if we cut use and impacts per unit of GDP in half, but continued with 3% p.a. economic growth, then **in 23 years the resource demands and impacts would be back up to where they were before the cuts, and would be twice as great in another 23 years**. Again the evidence on de-coupling is that **no progress is being made** on reducing demands and impacts. The ‘tech-fix” faith assumes there is no need to rethink consumer-capitalist society, because technical advances will enable us all to go on living more and more affluently, for ever. The Simpler Way view is that the enormous problems that consumer-capitalist society constantly creates are far too big for technical advance to solve. Finally, if technical advance is going to solve our big problems, **when is it going to start doing so?** They are all **rapidly getting worse at present**. Could renewable energy solve the problem? There is a strong case that **it will not be possible/affordable to run all functions in our present energy-intensive consumer-capitalist society on renewable energy**. (For the detailed case see Trainer, 2017.) The first of the two main problems is that because the sun and wind are very intermittent (… and might make no contribution for two weeks in a row in a European winter) a probably **unaffordable amount of costly redundant or excess plant and/or energy storage capacity would be needed**. The second problem is that the **world has far too little biomass to produce enough liquid fuel**. Note that **even if we solved the energy problem many other serous global problems being caused by overconsumption etc. would remain**.

#### Warming causes extinction and turns every impact

**Cribb, 17**—principal of JCA, Fellow of the Australian Academy of Technological Sciences and Engineering, former Director, National Awareness, CSIRO (Julian, “The Baker,” *Surviving the 21st Century* Chapter 4, pg 91-94, dml)

This event, known as the Palaeocene-Eocene Thermal Maximum or PETM, happened only about ten million years after the dinosaurs were smashed by an asteroid impact. This ‘hyperthermal’ period took place quite suddenly (in geological terms)—in less than 2000 years—and lasted for about 170,000 years before the planet again cooled. The heat spike was accompanied by a major wipe-out of ocean life in particular, though most small land mammals survived. Investigating the records of old marine sediments Zeebe was able to show there had been a sharp, 70 %, leap in atmospheric CO 2 concentrations at the time. However, he concluded there was only sufficient carbon available to force the climate to warm by 1–3 °C and that some other mechanism must have been triggered by the initial warming, which then drove the Earth’s temperature to fever pitch, up by another 4–6 °C (Zeebe et al. 2009). This process is the ‘ **runaway global warming** ‘ which now menaces us.

 The significance of PETM is that it appears that about the same volume of carbon was dumped by natural processes into the Earth’s atmosphere and oceans as humans are **currently dumping** with the burning of fossil fuels and clearing of the world’s forests—about 3 trillion tonnes in all—and it was this that triggered the **hyperthermal surge** in planetary heating.

As to the mechanism that could suddenly release a huge amount of extra carbon into the atmosphere and oceans and project global temperatures up by 6–9 °C, the most likely explanation is the one described at the start of this chapter—the **rapid melting** and **escape** of billions of tonnes of **frozen methane**, CH 4 , currently locked in tundra and seabed sediments. This phenomenon, dubbed the “clathrate gun ” (Kennett et al. 2003), is now linked by scientists not only with the PETM event but also, according to palaeontologist Peter Ward, with the Great Death of the Permian, the worst annihilation in the history of life on Earth (Ward 2008). The significance of the clathrates is that they consist of methane, a gas that is 72 times more powerful than CO 2 as a climate forcing agent in the short run, and 25 times stronger over a century or so. The clathrates could be released by a process known as ‘ ocean overturning ’, a shift in global current patterns caused by moderate warming, which brings warmer water from the surface down into the depths, to melt the deposits of frozen gas. Unlocking several trillion tonnes of methane would cause global temperatures to **rocket upwards sharply**. Once such a process gets under way, **most experts** consider, warming will happen **so fast** it is **doubtful** if humans could do anything to stop it **even if** they **instantly ceased** all burning of fossil fuels.

 This ‘**double whammy**’ of global warming caused by humans releasing three trillion tonnes of fossil carbon which then precipitates an uncontrollable second phase driven by the melting of all or part of the five trillion tonnes of natural methane deposits (Buff et & Archer 2004) is the **principal threat** to civilisation in the twenty-first century and, combined with nuclear conflict (Chap. 4), to the **survival of the human species**.

 The IPCC’s fifth report states that the melting of between 37 and 81 % of the world’s tundra permafrost is ‘virtually certain’ adding “There is a **high risk** of **substantial carbon** and **methane emissions** as a result of **permafrost thawing** ” ((IPCC 2014a), p. 74). This could involve the venting of as much as 920 billion tonnes of carbon. However, the Panel did not venture an estimate for methane emissions from the melting of the far larger seabed clathrates and a number of scientists have publicly criticised the world’s leading climate body for remaining so close-lipped about this mega-threat to human existence. The IPCC’s reticence is thought to be founded on a lack of adequate scientific data to make a pronouncement with confidence—and partly to fear of the mischief which the fossil fuels lobby would make of any premature estimates. However, it critics argue, by the time we know for sure that the Arctic and seabed methane is escaping in large volumes, it will be too late to do anything about it.

 The difficulty is that no-one knows how quickly the Earth will heat up, as this depends on something that cannot be scientifically predicted: the behaviour of the whole human species and the timeliness with which we act. Failure to abolish carbon emissions in time will make a 4–5 °C rise in temperature likely. As to what that may mean, here are some eminent opinions :

• Warming of 5 °C will mean the planet can support fewer than 1 billion people—Hans-Joachim Shellnhuber, Potsdam Institute for Climate Impact Research (Kanter 2009)

• With temperature increases of 4–7 °C **billions of people** will have to move and there will be **very severe conflict**—Nicholas Stern, London School of Economics (Kanter 2009)

• Food shortages, refugee crises, flooding of major cities and entire island nations, mass extinction of plants and animals, and a climate so drastically altered it may be dangerous for people to work or play outside during the hottest times of the year—IPCC Fifth Assessment (IPCC 2014b)

• Corn and soybean yields in the US may decrease by 63–82 %—Schlenker and Roberts, Arizona State University (Schlenker & Roberts 2009a)

• Up to **35%** of the Earth’s species will be **committed to extinction**—Chris Thomas, University of Leeds (Thomas et al. 2004)

• Total polar melting combined with thermal expansion could involve sea levels eventually rising by 65 m (180 ft), i.e. to the 20th floor of tall buildings, drowning most of the world’s coastal cities and displacing a third or more of the human population (Winkelmann et al. 2015)

• **Intensified global instability**, **hunger**, **poverty** and **conflict**. **Food** and **water shortages**, **pandemic disease**, disputes over **refugees** and **resources**, and **destruction** by **natural disasters** in regions across the globe—Chuck Hagel, US Secretary for Defence (Hagel 2014)

• “Almost inconceivable challenges as human society struggles to adapt… billions of people forced to relocate.… worsening tensions especially over resources… armed conflict is **likely** and **nuclear war** is possible”— Kurt Campbell, Center for Strategic and International Studies (Campell et al. 2007).

• “Unless we get control of (global warming), **it will mean our extinction** eventually”—Helen Berry, Canberra University (Snow & Hannam 2014).

#### Yes transition – the working class is disillusioned with neoliberal democracy – that leaves room for leftist degrowth movements to fill in

**Saad-Filho ‘16**, - Professor of Political Economy in the Department of Development Studies, University of London (Alfredo, " The end of the road? The global crisis and the disintegration of neoliberalism " openDemocracy, 12-6-2016, https://www.opendemocracy.net/en/end-of-road-global-crisis-and-disintegration-of-neoliberalism/) //AL

The rise of nationalist authoritarianism is not a transient wobble on the march of neoliberal democracy towards the ‘end of history’. Quite the contrary: it is the incubus springing from the lumpenisation of neoliberal economies and societies through several rounds of restructuring under the guise of ‘adjustment’, inflation control and the pursuit of ‘competitiveness’, culminating in the ‘new normal’ of long-term economic stagnation punctuated by crises. In doing this, neoliberal restructuring has also begotten the lumpenisation of politics. As neoliberalism hollowed out economies it also eroded the social structures in most countries, with labour at the centre, creating a large and heterogeneous array of ‘losers’. The condition of labour has deteriorated for the informal workers, the traditional middle classes, and almost everyone else. Millions of skilled jobs have disappeared, and entire professions have either vanished or were exported to cheaper shores. Employment opportunities in the public sector shrunk, job stability retreated, and pay and conditions worsened everywhere. Hundreds of millions of people worldwide have been deskilled and, effectively, drowned into what Karl Marx described as the lumpenproletariat and the reserve army of labour. The ‘losers’ include informal workers with no realistic prospect of stable employment, underemployed skilled workers, employees fearing the disappearance of their jobs, indebted small business owners, bankrupt small farmers, endangered middle managers, threatened small business owners, anxious civil servants, panicky pensioners, and the remnants of erstwhile privileged social strata bewailing their mounting debts and inability to bequeath better circumstances to their offspring. These ‘losers’ lack a common culture or a sense of collectivity drawing upon shared material circumstances; they also distrust political systems that seem to bypass them. Heterogeneous, divided and disorganised, they are unable to resist the continuing rollout of ‘reforms’. Worse: just as the lumpenproletariat is highly vulnerable to political capture by the élite, the losers in lumpenised neoliberal societies are prone to capture by the political right. Under neoliberalism, left parties, trade unions and mass organisations have imploded because of social and economic change as well as repression. The entire political spectrum has shifted to the right, and the blockage of collective forms of dissent has fed political apathy, anomie, and the sense that politicians are there only for the taking. The ‘losers’ tend to perceive the evacuation of democracy through the lens of corruption and capture, in contrast to the sepia-tinted ‘good old days’ of economic certainty and (limited) privileges, including jobs for life, law and order, monochrome neighbours and obedient wives. They tend to see today’s political systems as serving primarily the rich (bankers, tax dodgers, self-perpetuating political élites, foreign tycoons), so-called ‘privileged minorities’ (constructed to mean women, selected ethnic or national groups, or supposed sexual ‘deviants’), and alien hordes. Annoyingly, all of them seem to draw state support, while the morally upright ‘losers’ find it impossible to make ends meet. Perhaps even worse than these economic hardships is the erosion of their proud, even if not elevated, social standing: it is difficult to understand what has hit them, and why. These woes lead lumpenised groups of ‘losers’ to project their hopes and fears onto a universalist (classless) ethics and reactionary political programmes drawing upon ‘common sense’. These tend to be framed through the language of rights, respect, taking back control, and the preservation of ancient privileges, and fronted by ‘strong’ leaders who can ‘get things done’. These choices reflect the desperate search for a way to short-circuit a logjammed political system and secure gains to those who have grown tired of losing out, and lack a sense of security grounded on income, assets, merit, citizenship, or anything else. Those agendas also express their revulsion at slick politicians delivering, time and again, convoluted excuses for inaction while the living conditions of the majority continue to deteriorate. The implosion of post-war social democracy can be directly related to these neoliberal pressures. Mainstream conservative parties have shown greater resilience, both because of their closer identification with neoliberal ideology and policy practice, and because the right is used to deploying misleading or unrealistic programmes and nationalist slogans. They are well positioned to offer disgruntled voters a random menu of desirables, regardless of contradiction even with neoliberalism itself. Those programmes tend to be naïve, exclusionary, divisive, xenophobic, racist and morally conservative. Yet, even those parties have been triangulating towards an increasingly strident nationalism. Down their necks breathes a new generation of proto- and neo-fascist movements parading even more aggressive slogans. The far right has a proven ability to mobilise on the basis of national, physical, religious or gender identity, and it thrives best in conditions of anomie: current conditions favour its continuing prosperity. The limits of nationalist authoritarianism Nationalist authoritarianism has emerged in response to the economic contradictions of neoliberalism, the sclerosis of the political institutions regulating its metabolism and the corrosion of its ideological foundations. It is, however, limited, because the aggregation of individual demands does not support transformative programmes grounded upon material reality, which are necessary to address the structural problems of accumulation and social reproduction under late neoliberalism and the ecological crisis. Even though authoritarian neoliberal leaders are unlikely to deliver their key promises, this does not prevent them from trying, or from achieving selected goals irrespective of cost or consequence. The (unavoidable) failures of nationalist authoritarianism can lead social dissatisfaction under late neoliberalism to remain unfocused, feeding unpredictable explosions followed by rapid evaporation. These cycles of revolt will be destabilising for the economic reproduction of neoliberalism and for constitutional politics. These grievances also tend to remain unresolved, fuelling further waves of instability. These alarming political developments have not evolved to shield neoliberalism against the insurgency of an organised left demanding political and economic democracy. Quite the contrary: nationalist authoritarianism is the expression of the impotent fury of a disorganised array of losers under neoliberalism, in conditions of social disorganisation, global crisis, and accelerated economic restructuring. Their focus on attacking the weak – immigrants, refugees, the ‘undeserving poor’, the unjustifiably ‘privileged’ by state action and judicial activism – feeds retrograde political programmes and poses the urgent need for sustainable and democratic left-wing alternatives. The economic and political platforms against neoliberalism, and the aspiration for democracy, can be integrated through the demand for distributive and democratic economic policies. These demands are, simultaneously, fundamental conditions for a substantive democracy, and incompatible with nationalist authoritarianism. They also reflect the notion that the most promising lever for challenging neoliberalism is political, both because neoliberalism’s key vulnerabilities are in the political domain, and because politicised mass movements are essential for progressive social and economic change. There is a race between the restoration of social and political collectivity and barbarism. The winner will take it all.

## Frontlines

### 2NC --- Overview

#### Economic Growth is terminally unsustainable – the global economy is expending resources at an exponential pace – leaves us with zero resources by 2050 – carbon emissions cause catastrophic levels of warming through feedback loops and lack of decoupling efforts now means adaptation check our only option is to transition – prolong economic decline causes the proletariat to transition to radical leftist politics creating a sustainable way of living

### 2NC --- No Impact to Decline

#### No Impact to economic decline – to win risk of escalation they must answer every warrant from Walt and pref walt takes into account covid

#### Global economic recession creates mutual under confidence – empirics prove war more likely due to over confidence – Iraq – Iran and Kuwait prove

#### Covid thumps – countries focused industrial capacity on prevention not war – Saudis in Yemen prove

#### No incentive – Leaders globally lose legitimacy – war kills it more and only marginally grows econ – any large-scale military campaign would destroy lockdown efforts and end in disaster

#### Economic decline increases cooperation.

Christina L. **Davis &** Krzysztof J. **Pelc 17**, Christina L. Davis is a Professor of Politics and International Affairs at Princeton; Krzysztof J. Pelc is an Associate Professor of Political Science at McGill University, “Cooperation in Hard Times: Self-restraint of Trade Protection,” Journal of Conflict Resolution, 61(2): 398-429

Conclusion Political economy theory would lead us to expect rising trade protection during hard times. Yet **empirical evidence** on this count has been mixed. Some studies find a correlation between poor macroeconomic conditions and protection, but the worst recession since the Great Depression has generated surprisingly moderate levels of protection. We explain this apparent contradiction. Our statistical findings show that under conditions of pervasive economic crisis at the international level, states exercise more **restraint** than they would when facing crisis alone. These results throw light on behavior not only during the crisis, but throughout the WTO period, from 1995 to the present. One concern may be that the restraint we observe during widespread crises is actually the result of a decrease in aggregate demand and that domestic pressure for import relief is lessened by the decline of world trade. By **controlling** for **product-level imports**, we show that the restraint on remedy use is not a byproduct of declining imports. We **also** take into account the ability of some countries to **manipulate their currency** and demonstrate that the relationship between crisis and trade protection **holds** independent of exchange rate policies. Government decisions to impose costs on their trade partners by taking advantage of their legal right to use flexibility measures are driven not only by the domestic situation but also by circumstances abroad. This can give rise to an individual **incentive for strategic self-restraint** toward trade partners in similar economic trouble. Under conditions of widespread crisis, government leaders **fear** the **repercussions** that their own use of trade protection may have on the behavior of trade partners at a time when they cannot afford the economic cost of a trade war. Institutions provide **monitoring** and a venue for **leader interaction** that **facilitates coordination** among states. Here the key function is to reinforce expectations that any move to protect industries will trigger similar moves in other countries. Such coordination often draws on shared historical analogies, such as the Smoot–Hawley lesson, which form a focal point to shape beliefs about appropriate state behavior. Much of the literature has focused on the more visible action of legal enforcement through dispute settlement, but this only captures part of the story. Our research suggests that tools of informal governance such as leader pledges, guidance from the Director General, trade policy reviews, and plenary meetings **play a real role** within the trade regime. In the absence of sufficiently stringent rules over flexibility measures, compliance alone is insufficient during a global economic crisis. These **circumstances** trigger **informal mechanisms** that complement legal rules to **support cooperation**. During widespread crisis, legal enforcement would be inadequate, and informal governance helps to bolster the system. Informal coordination is by nature difficult to observe, and we are unable to directly measure this process. Instead, we examine the variation in responses across crises of varying severity, within the context of the same formal setting of the WTO. Yet by focusing on discretionary tools of protection—trade remedies and tariff hikes within the bound rate—we can offer conclusions about how systemic crises shape country restraint independent of formal institutional constraints. Insofar as institutions are generating such restraint, we offer that it is by facilitating informal coordination, since all these instruments of trade protection fall within the letter of the law. Future research should explore trade policy at the micro level to identify which pathway is the most important for coordination. Research at a more macro-historical scope could compare how countries respond to crises under fundamentally different institutional contexts. In sum, the determinants of protection include economic downturns not only at home but also abroad. Rather than reinforcing pressure for protection, pervasive crisis in the global economy is shown to generate countervailing pressure for restraint in response to domestic crisis. In some cases, **hard times bring more, not less, international cooperation**.

### 2NC --- Sustainability

#### Neolib economic growth is terminally unsustainable – as long as we win one warrant for unsustainability we ow and turn aff offense

#### Climate

#### 50% of carbon emissions cannot be sequestered now – ensures innovation cant check dangerous levels of warming and covid proves limited cap cant check either – that’s trainer

#### COVID proves – degrowth is the only way to solve climate change

**Love ‘20**, - cites Maurie Cohen, a professor of sustainability studies at the New Jersey Institute of Technology, and Jason Hickel, an economic anthropologist at the London School of Economics. (Shayla, "COVID-19 Broke the Economy. What If We Don’t Fix It?" Vice, 6-16-2020, https://www.vice.com/en\_us/article/qj4ka5/covid-19-broke-the-economy-what-if-we-dont-fix-it) //AL

Certain researchers have argued that our hyperfocus on economic growth was problematic long before we knew the words SARS-CoV-2 or COVID-19. The "degrowth" movement has advocated for reducing production of goods, working hours, and, inevitably, GDP—all with the end goal of reducing carbon emissions. **With the economy at a standstill, we're being challenged** by some experts **to envision a different kind of economy**—one that could help solve the climate crisis, rather than make it worse. While the pandemic has had a tangible effect on people's ability to work and spend money, it has also led global **carbon emissions** to **fall by more than 8 percent so far**, as Nature reported—three times the yearly emissions of Italy. Emissions **dropped** more than **one billion tonnes** in the first four months of 2020 compared to 2019. This is **close to the emission reductions that are needed to meet the goals of** the 2015 **Paris** climate agreement, and stop the planet from warming more than 1.5 to 2°C. The reduction of consumption, emissions, and lowering of GDP that is happening now is **a side effect of the pandemic, not a sustainable** or desirable **way to slash** carbon **output** because of the loss of human life, strict lockdowns, and shuttering of schools and small businesses we value. But in Future Earth, Maurie Cohen, a professor of sustainability studies at the New Jersey Institute of Technology, wrote that the pandemic, from a sustainability standpoint, **offers a rare window of opportunity** both for quality of life and the habitability of the planet. Rather than aiming to have the economy—and emissions—jump back up after the pandemic is over, it could be a moment to **think about how to keep emissions down as we reopen and rebuild**. That might involve leaving growth behind. What if, instead of going back to work full-time, we decided to work less, buy less, make less, and not fight to raise GDP at any cost?Jason Hickel, an economic anthropologist at the London School of Economics, said that **we need to switch to renewable energy** as quickly as possible, **but** that **it's impossible** to do that **while growing the economy at the same time**. A group of 1**,100 experts from** more than **60 countries** recently **signed a letter proposing guidelines** **to how the economy should be revived, with a focus on climate**, health, and well-being **instead of growth**. The economic hardships we are currently facing could be viewed as an opening to experiment with more progressive policies to ensure people can have access to what they need like universal income or healthcare in a post-growth economy.

#### Adaptation fails

**Johnson and Morehouse 14**. Harlan Morehouse - Lecturer, [University of Vermont](https://scholar.google.com/citations?view_op=view_org&hl=en&org=3899249944577069771), Department of Geography. Elizabeth Johnson- Assistant Professor in the [Department of Geography](https://www.dur.ac.uk/geography/). “After the Anthropocene: Politics and geographic inquiry for a new epoch” 2014. [https://sci-hub.tw/https://doi.org/10.1177/0309132513517065](https://sci-hub.tw/https:/doi.org/10.1177/0309132513517065). ckm-eg.

Humans are remarkably ingenious, and have adapted to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many **stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks.** For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). **Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm.** In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/).

Secondly, unlike past environmental challenges, **the earth’s climate system is rife with positive feedback loops**. In particular, **as CO2 increases and the climate warms, that very warming can cause more CO2 release which further increases global warming, and then more CO2, and so on.** Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox et al., 2000; Hajima et al., 2014; Knutti & Rugenstein, 2015; Rosenfeld et al., 2014). This produces a wide range of future scenarios. Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001).

**Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warning** (Melillo et al, 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss ACCEPTED MANUSCRIPT and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey et al., 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies et al., 2002). **Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions.** The expectation is that forest fires will become more frequent and severe with climate warming and drought (Scholze et al., 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al, 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-californialargest-wildfire ). This catastrophic fire embodies the sorts of positive feedbacks and interacting factors that could catch humanity off-guard and produce a true apocalyptic event. Recordbreaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming.

#### Decoupling fails

#### their studies ignore outsourcing energy-intensive industries

**Kan et al ‘19**, - researchers at the Laboratory of Systems Ecology and Sustainability Science at the College of Engineering in Peking, (Siyi Kan, Bin Chen, Guoqian Chen, "Worldwide energy use across global supply chains: Decoupled from economic growth?" Applied Energy Volume 250, Pages 1235-1245) //AL

Decoupling performances under multiple perspectives reflect distinct ways of an economy’s dependence on energy, based on the positions the economy holds in global supply chains. Extraction-based decoupling performances reflect an economy’s dependence on energy from extraction either as resources to support domestic use or as a kind of tradable commodity enabling downstream energy use in the supply chains. For instance, many years of weak decoupling between GDP and energy production in Russia implies Russia’s falling dependence on energy production to support economic growth, though Russia was still an important primary supplier of primary energy. Decoupling states under production-based principle mirror an economy’s dependence on domestic energy use as heat and power to support sectoral operation (e.g., transport) and production (e.g., manufacturing). For instance, USA saw decoupling between GDP and total direct primary energy use in many years, indicating USA became less reliant on domestic energy use to maintain one unit of GDP growth. Several factors are associated with domestic energy use, such as economic scale, domestic energy efficiency and industrial structure. Energy efficiency was once considered as the main factor that contributes to energy-economy decoupling, and high expectations have been placed on domestic energy efficiency improvement to reduce energy use [66]. However, with growing environmental concerns and increasing degree of specialization and cooperation, more and more economies tend to upgrade industrial structure (e.g., deindustrialization and tertiarization) by outsourcing energy-intensive industries, which shifts energy use abroad [38]. Therefore, it is imperative to investigate consumption-based decoupling performances, which take into account an economy’s off-site energy use triggered by international trade. Decoupling performances under consumption-based principle reveal to what extent an economy relies on global energy use (both home and abroad) to support its final consumption. In the case of USA, several years of negative decoupling between GDP and embodied energy use took place, manifesting more reliance on energy use across global supply chains to develop USA economy, despite decreasing reliance on domestic energy use as discussed above. EU and Japan also witnessed similar phenomenon. By contrast, China saw negative decoupling under production-based principle but saw weak decoupling under consumption-based principle in 2002–2005. With processing trade, China acted as an important producer to produce extensive intermediate or final products aimed for export [67], triggering heavier reliance on domestic energy use than energy embodied in final consumption. The situation was reversed after 2008, perhaps due to China’s increasing domestic demand as seen in Section 3 and relocation of some energy-intensive industries from China to other developing countries [68]. In sum, analyses under all the principles can provide useful decoupling information, while each of them solely is not sufficient to guide policy makings. Extraction-based and production-based principles avoid obstacles in cross-border cooperation to some degree, making it easier for an individual economy to account, set targets, monitor and implement related policies. Therefore, an individual economy can actively take actions to achieve local energy-economy decoupling by reference to extraction-based and production-based results. However, such positive decoupling in one economy may be achieved at the cost of negative decoupling in other economies. Analyses on this basis ignore international energy stress shift, and may underestimate an economy’s actual energy use. As a result, they can cause decoupling delusion and consequent shallow optimism for policy makers, which in turn leads to loosening regulations and even compromises global efforts to obtain energy-economy decoupling. Consumption-based investigations are therefore indispensable to avoid deceptive image of decoupling and offer complementary views. But actions from consumption-based principles are also confronted with many barriers when it comes to practicability. One major impediment is the availability of timely detailed and precise data to conduct consumption-based calculations. Accurate calculations require mega data of high regional and sectoral resolution (e.g. international and intersectoral trade data), which is difficult to collect. Another is coordination between different economies. It is hard to define responsibility of all the agents along global supply chains, and integrated international cooperation under agreed-upon norms is therefore difficult to achieve. Given all this, decoupling analyses from multiple analyses should be integrated in policy makings to provide holistic picture of global and regional decoupling states, in order to promote efforts towards both local and global energy-economy decoupling. 4.2. The necessity of decoupling analyses for different energy sources  Decoupling analyses for different energy sources uncover the varying degrees of an economy’s dependence on different energy sources, which can reveal where the economy is situated in the trajectory towards clean energy mix. However, this is concealed in the decoupling analyses for total primary energy consumption. What is more, another delusion may occur when sustainability of an energy system is assessed based on decoupling indicators measured by total primary energy use. For instance, USA economy strongly decoupled from total embodied primary energy use during 2001–2003, while it still negatively decoupled from embodied coal consumption. Thus, states of decoupling measured by total primary energy do not necessarily represent a clean energy use pattern. Meanwhile, USA economy and total embodied primary energy use were in negative decoupling states during 2007–2008, mainly because USA was more reliant on embodied natural gas, nuclear energy and renewables. This indicates negative decoupling states do not necessarily represent unsustainable energy systems either. This kind of delusion also exists in global decoupling analyses. Results show that global GDP and total primary energy use were in weak decoupling in most of the years during 2000 to 2011. However, the world economy still coupled with coal use, which poses a great barrier to global carbon mitigation.

#### AR5 mitigation scenarios fail – Carbon sequestration unfeasible and no empirical support for successful decoupling

**Hickel and Kallis ‘19**, - Hickel is a researcher at the university of London. Kallis is an environmental scientist who has a PhD in Environmental Policy and Planning  and a Masters in Environmental Engineering and a Bachelors degree in Chemistry, both from Imperial College, London. He has worked in the past at the Office of Scientific and Technological Assessment of the European Parliament (1995-1996) contributing to the revision of the EU water directives and served as a consultant for UNEP-MAP, PAP-RAC preparing guidelines for integrated urban water management in coastal areas (2004). He collaborated with R.Norgaard at the University of California at Berkeley to develop the concept of socio-ecological coevolution. His current work explores the idea of sustainable de-growth. (Jason and Giorgos, "Is Green Growth Possible?" New Political Economy, 4-17-2019) //AL

The IPCC’s Fifth Assessment Report (AR5) includes 116 mitigation scenarios that are consistent with Representative Concentration Pathway 2.6 (RCP2.6), which offers the best chances of staying below 2°C. All of these scenarios are green growth scenarios in that they stabilise global temperatures while global GDP continues to rise. Rising GDP is a built-in feature of the Shared Socio-Economic Pathways (SSPs), which form the basis for the IPCC mitigation scenarios (Kuhnhenn [2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Kuhnhenn, K., 2018. Economic growth in mitigation scenarios: a blind spot in climate science. Berlin: Heinrich Boll Foundation. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&author=K.+Kuhnhenn&title=Economic+growth+in+mitigation+scenarios%3A+a+blind+spot+in+climate+science)). AR5 warns, however, that these scenarios ‘typically involve temporary overshoot of atmospheric concentrations’ and ‘typically rely on the availability and widespread deployment of bioenergy with carbon capture and storage (BECCS)’ ([2014](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)IPCC, 2014. Climate change 2014 synthesis report – summary for policymakers. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=IPCC%2C+2014.+Climate+change+2014+synthesis+report+%E2%80%93+summary+for+policymakers.), p. 23). Indeed, the vast majority scenarios for 2°C (101 of the 116) rely on BECCS to the point of achieving negative emissions.[8](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)8 Another 9 scenarios include some BECCS, but not to the point of achieving negative emissions. BECCS entails growing large tree plantations to sequester CO2 from the atmosphere, harvesting the biomass, burning it for energy, capturing the CO2 emissions at source and storing it underground. Relying on these ‘negative emissions technologies’ allows for a much larger carbon budget (about double the actual size) by assuming that we can successfully reduce global atmospheric carbon in the second half of the century. BECCS is highly controversial among climate scientists. It was first proposed by Obersteiner et al. ([2001](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Obersteiner, M., et al., 2001. Managing climate risk. Laxenburg: International Institute for Applied Systems Analysis.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0049&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1126%2Fscience.294.5543.786b), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2001&author=M.+Obersteiner&title=Managing+climate+risk)) and Keith ([2001](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Keith, D.W., 2001. Sinks, energy crops and land use: coherent climate policy demands an integrated analysis of biomass. Climatic change, 49 (1), 1–10.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1023%2FA%3A1010617015484), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000167812800001), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2001&pages=1-10&issue=1&author=D.W.+Keith&title=Sinks%2C+energy+crops+and+land+use%3A+coherent+climate+policy+demands+an+integrated+analysis+of+biomass)) at the turn of the century. IPCC modelling teams began including it in their scenarios from 2005, despite having no firm evidence of its feasibility. With the publication of AR5, BECCS was enshrined as a dominant assumption. Obersteiner has expressed alarm at the rapid uptake of his idea; he considers BECCS to be what he calls a ‘risk-management strategy’, or a ‘backstop technology’ in case climate feedback loops turn out to be worse than expected, and says the IPCC has ‘misused’ it by including it in regular scenarios to take pressure off of conventional mitigation pathways (i.e. emissions reductions) (Hickman [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Hickman, L. 2016. The history of BECCS. Carbon Brief.<https://www.carbonbrief.org/beccs-the-story-of-climate-changes-saviour-technology>. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Hickman%2C+L.+2016.+The+history+of+BECCS.+Carbon+Brief.+https%3A%2F%2Fwww.carbonbrief.org%2Fbeccs-the-story-of-climate-changes-saviour-technology.)). In Keith’s ([2001](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Keith, D.W., 2001. Sinks, energy crops and land use: coherent climate policy demands an integrated analysis of biomass. Climatic change, 49 (1), 1–10.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1023%2FA%3A1010617015484), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000167812800001), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2001&pages=1-10&issue=1&author=D.W.+Keith&title=Sinks%2C+energy+crops+and+land+use%3A+coherent+climate+policy+demands+an+integrated+analysis+of+biomass)) initial formulation of the idea, he noted that while ‘measured use’ of biomass could help mitigate environmental problems, ‘large scale use of cropped biomass will not.’ Anderson and Peters ([2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Anderson, K., and Peters, G., 2016. The trouble with negative emissions. Science, 354 (6309), 182–183.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0004&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1126%2Fscience.aah4567), [[PubMed]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0004&dbid=8&doi=10.1080%2F13563467.2019.1598964&key=27738161), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0004&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000387816500024), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=182-183&issue=6309&author=K.+Anderson&author=G.+Peters&title=The+trouble+with+negative+emissions)) point out that the ‘allure’ of BECCS is due to the fact that it allows politicians to postpone the need for rapid emissions reductions: ‘BECCS licenses the ongoing combustion of fossil fuels while ostensibly fulfilling the Paris Commitments.’ There are a number of concerns. First, the viability of power generation with CCS has never been proven to be economically viable or scalable; it would require the construction of 15,000 facilities (Peters [2017](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Peters, G., 2017. Does the carbon budget mean the end of fossil fuels? Climate News. Available from: <https://www.cicero.oslo.no/en/posts/klima/does-the-carbon-budget-mean-the-end-of-fossil-fuels>. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Peters%2C+G.%2C+2017.+Does+the+carbon+budget+mean+the+end+of+fossil+fuels%3F+Climate+News.%C2%A0Available+from%3A%C2%A0https%3A%2F%2Fwww.cicero.oslo.no%2Fen%2Fposts%2Fklima%2Fdoes-the-carbon-budget-mean-the-end-of-fossil-fuels.)). Second, the scale of biomass assumed in the AR5 scenarios would require plantations covering land two to three times the size of India, which raises questions about land availability, competition with food production, carbon neutrality, and biodiversity loss (Smith et al. [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Smith, P., et al., 2016. Biophysical and economic limits to negative CO2emissions. Nature climate change, 6 (1), 42–50.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0061&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fnclimate2870), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0061&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000367030800017), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=42-50&issue=1&author=P.+Smith&title=Biophysical+and+economic+limits+to+negative+CO2+emissions); Heck et al. [2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Heck, V., et al., 2018. Biomass-based negative emissions difficult to reconcile with planetary boundaries. Nature climate change, 8, 151–155.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0027&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fs41558-017-0064-y), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0027&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000423842400018), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&pages=151-155&author=V.+Heck&title=Biomass-based+negative+emissions+difficult+to+reconcile+with+planetary+boundaries)). Third, the necessary storage capacity may not **exist** (De Coninck and Benson [2014](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)De Coninck, H., and Benson, S.M., 2014. Carbon dioxide capture and storage: issues and prospects. Annual review of environment and resources, 39, 243–270.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0012&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1146%2Fannurev-environ-032112-095222), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0012&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000348446900010), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2014&pages=243-270&author=H.+De+Coninck&author=S.M.+Benson&title=Carbon+dioxide+capture+and+storage%3A+issues+and+prospects), Global CCS Institute [2015](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Global CCS Institute, 2015. Global status of CCS 2015: summary report. Melbourne. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Global+CCS+Institute%2C+2015.+Global+status+of+CCS+2015%3A+summary+report.%C2%A0Melbourne.)). Anderson and Peters conclude that ‘BECCS thus remains a highly speculative technology’ and that relying on it is therefore ‘an unjust and high stakes gamble’: if it is unsuccessful, ‘society will be locked into a high-temperature pathway.’ This conclusion is shared by a growing number of scientists (e.g. Fuss et al. [2014](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Fuss, S., et al., 2014. Betting on negative emissions. Nature climate change, 4 (10), 850–853.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0016&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fnclimate2392), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0016&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000344597000010), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2014&pages=850-853&issue=10&author=S.+Fuss&title=Betting+on+negative+emissions), Vaughan and Gough, [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Vaughan, N.E., and Gough, C., 2016. Expert assessment concludes negative emissions scenarios may not deliver. Environmental research letters, 11, 095003.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0073&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1088%2F1748-9326%2F11%2F9%2F095003), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0073&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000384060600001), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=095003&author=N.E.+Vaughan&author=C.+Gough&title=Expert+assessment+concludes+negative+emissions+scenarios+may+not+deliver), Larkin et al. [2017](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Larkin, A., et al., 2017. What if negative emissions technologies fail at scale? Climate policy, 18, 690–714.[[Taylor & Francis Online]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0047&dbid=20&doi=10.1080%2F13563467.2019.1598964&key=10.1080%2F14693062.2017.1346498&tollfreelink=139069_3867371_5fbf43978b04d74c2fa259ad0ace059e6c66b011d8e943515ccd6189b1bb9a79), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2017&pages=690-714&author=A.+Larkin&title=What+if+negative+emissions+technologies+fail+at+scale%3F), Van Vuuren et al. [2017](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Van Vuuren, D.P., et al., 2017. Open discussion of negative emissions is urgently needed. Nature energy, 2, 902–904.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0071&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fs41560-017-0055-2), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0071&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000418244000011), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2017&pages=902-904&author=D.P.+Van+Vuuren&title=Open+discussion+of+negative+emissions+is+urgently+needed)), and by the European Academies’ Science Advisory Council ([2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)European Academies Science Advisory Council. 2018. Negative emission technologies: what role in meeting Paris agreement targets? EASAC Policy Report 35. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=European+Academies+Science+Advisory+Council.+2018.+Negative+emission+technologies%3A+what+role+in+meeting+Paris+agreement+targets%3F+EASAC+Policy+Report+35.)). It is not clear that we can justifiably rely on BECCS, an unproven technology, to underwrite green growth theory. If we accept this point, then we must return to asking whether it is possible to maintain growth without relying on BECCS to stay within the carbon budgets consistent with the Paris Agreement. Without BECCS, global emissions need to fall to net zero by 2050 for 1.5°C, or by 2075 for 2°C.[9](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)9 PWC Low Carbon Economy Index 2017.View all notes This entails reductions of 6.8 per cent per year and 4 per cent per year, respectively ([Figure 5](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964#F0005)). Theoretically, this can be accomplished with (a) a rapid shift to 100 per cent renewable energy to eliminate emissions from fossil fuel combustion (Jacobson and Delucchi [2011](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Jacobson, M.Z., and Delucchi, M., 2011. Providing all global energy with wind, water, and solar power, part i: technologies, energy resources, quantities and areas of infrastructure, and materials’. Energy policy, 39 (3), 1154–1169.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0039&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1016%2Fj.enpol.2010.11.040), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0039&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000288971100014), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2011&pages=1154-1169&issue=3&author=M.Z.+Jacobson&author=M.+Delucchi&title=Providing+all+global+energy+with+wind%2C+water%2C+and+solar+power%2C+part+i%3A+technologies%2C+energy+resources%2C+quantities+and+areas+of+infrastructure%2C+and+materials%E2%80%99)); plus (b) afforestation and soil regeneration to eliminate emissions from land use change; plus (c) a shift to alternative industrial processes to eliminate emissions from the production of cement, steel, and plastic. The question is, can all of this be accomplished quickly enough? Only 6 of the 116 scenarios for 2°C in AR5 exclude BECCS. These work by assuming ‘optimal full technology’ in all other areas, plus mass afforestation, and with high mitigation costs. These represent theoretically possible pathways, but without any empirical evidence as to their feasibility. Results of empirical studies are not promising. Schandl et al. ([2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Schandl, H., et al., 2016. Decoupling global environmental pressure and economic growth: scenarios for energy use, materials use and carbon emissions. Journal of cleaner production, 132 (2016), 45–56.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0059&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1016%2Fj.jclepro.2015.06.100), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=45-56&issue=2016&author=H.+Schandl&title=Decoupling+global+environmental+pressure+and+economic+growth%3A+scenarios+for+energy+use%2C+materials+use+and+carbon+emissions)) model what might be achieved with aggressive mitigation policies, without relying on BECCS. Their high-efficiency scenario has a carbon price starting at $50 per ton (rising by 4 per cent per year to $236 by 2050) plus a doubling in the material efficiency of the economy due to technological innovations (improving from a historical average rate of 1.5 per cent per year up to 4.5 per cent). Schandl et al provide no evidence for the feasibility of the efficiency improvements that they assume. Even so, the result shows that with global growth of 3 per cent per year, annual emissions plateau to 2050 but do not decline. In this scenario, growth in energy demand outstrips the rate of decarbonisation, violating the carbon budgets for 1.5°C and 2°C.

#### Only risk we turn - Decoupling is infeasible absent decline in economic growth

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Another way to approach this question is by looking at projected rates of decoupling. If we assume global GDP continues to grow at 3 per cent per year (the average from 2010 to 2014), then decoupling must occur at a rate of 10.5 per cent per year for 1.5°C, or 7.3 per cent per year for 2°C. If global GDP grows at 2.1 per cent per year (as PWC predicts), then decoupling must occur at 9.6 per cent per year for 1.5°C, or 6.4 per cent per year for 2°C. All of these targets are beyond what existing empirical models indicate is feasible. The Schandl et al model indicates that decoupling can happen by at most 3 per cent per year under optimistic conditions. Other models arrive at similar conclusions. Before adopting BECCS assumptions, the IPCC ([2000](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)IPCC, 2000. Special report on emissions scenarios. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=IPCC%2C+2000.+Special+report+on+emissions+scenarios.)) projected decoupling of 3.3 per cent per year in a global best-case scenario. The C-ROADS tool (developed by Climate Interactive and MIT Sloan) projects decoupling of at most 4 per cent per year under the most aggressive possible abatement policies: high subsidies for renewables and nuclear power, plus high taxes on oil, gas and coal. All of these results fall short of the decoupling rate that must be achieved if the global economy continues to grow at expected rates. Holz et al. ([2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Holz, C., et al., 2018. Ratcheting ambition to limit warming to 1.5 C–trade-offs between emission reductions and carbon dioxide removal. Environmental research letters, 13 (6), 064028.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0031&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1088%2F1748-9326%2Faac0c1), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0031&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000434819300003), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&pages=064028&issue=6&author=C.+Holz&title=Ratcheting+ambition+to+limit+warming+to+1.5+C%E2%80%93trade-offs+between+emission+reductions+and+carbon+dioxide+removal)) find that if we rule out widespread use of negative emissions technologies, the required rate of decarbonisation for meeting the Paris Agreement is ‘well outside what is currently deemed achievable, based on historical evidence and standard modelling.’ The challenge is even more difficult for rich nations. Anderson and Bows ([2011](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Anderson, K., and Bows, A., 2011. Beyond ‘dangerous’ climate change: emission scenarios for a new world. Philosophical transactions of the royal society of London a: mathematical, physical and engineering sciences, 369 (1934), 20–44.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0003&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1098%2Frsta.2010.0290), [[PubMed]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0003&dbid=8&doi=10.1080%2F13563467.2019.1598964&key=21115511), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0003&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000284692300004), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2011&pages=20-44&issue=1934&author=K.+Anderson&author=A.+Bows&title=Beyond+%E2%80%98dangerous%E2%80%99+climate+change%3A+emission+scenarios+for+a+new+world)) have modelled the emissions reductions necessary for achieving a 50 per cent chance of staying under 2°C (more relaxed than the two-thirds chance that the UNFCC calls for), without BECCS. They proceed from the principle of ‘common but differentiated responsibility’, whereby rich nations (Annex-1 nations) make more aggressive emissions reductions than poor nations, owing to their greater historical responsibility for emissions and their greater capacity for managing the costs of transition. They assume that Non-Annex 1 nations defer peak emissions until 2025, and thereafter reduce emissions by 7 per cent per year. They acknowledge that these are extremely ambitious assumptions but consider them to be the most feasible compromise between practicality and equity. To stay within the remaining carbon budget, Annex 1 nations need to reduce emissions by 8–10 per cent per year, beginning in 2015. This model was developed with data up to 2010; as the remaining carbon budget is now smaller, Anderson estimates that Annex 1 nations need to reduce emissions by 12 per cent per year.[13](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)13 This is the figure that Anderson used in various public talks in 2018. In 2019 he confirmed a range of 10–15 per cent per year, inpersonal correspondence.View all notesIf we accept that Annex 1 nations need to achieve emissions reductions of 12 per cent per year, and if we assume that GDP growth in Annex 1 nations continues at 1.86 per cent per year (the average from 2010 to 2014), then decoupling must occur at a rate of 15.8 per cent per year.[14](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)14 Using the equation: Rate of necessary decoupling = GDP growth rate/(1 – Rate of necessary emissions reductions).View all notes For perspective, this is eight times faster than the historic rate of decoupling in Annex 1 nations (viz., 1.9 per cent per year from 1970 to 2013), and it is important to bear in mind that the rate of decoupling has generally slowed over this period.[15](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)15 Decoupling slowed from an average of 2.3 per cent per year in the first half of the period to an average of 1.6 per cent in the second half, according to the World Bank, Databank, CO2 emissions (kg per 2010 US$ GDP).View all notes It also exceeds the decoupling rate implied by the average G20 Nationally Determined Contributions under the Paris Agreement (viz., 3 per cent per year) by a factor of five.There is one empirical model that feasibly accomplishes emissions reductions consistent with the Paris Agreement, without relying on negative emissions technologies. Published by Grubler et al. ([2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Grubler, A., et al., 2018. A low energy demand scenario for meeting the 1.5C target and sustainable development goals without negative emissions technologies. Nature energy, 3, 515–527.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0023&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fs41560-018-0172-6), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0023&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000435024900019), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&pages=515-527&author=A.+Grubler&title=A+low+energy+demand+scenario+for+meeting+the+1.5C+target+and+sustainable+development+goals+without+negative+emissions+technologies)), it was included in the IPCC Special Report on 1.5°C ([2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)IPCC, 2018. Global warming of 1.5C – summary for policymakers. Geneva: IPCC. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&author=IPCC&title=Global+warming+of+1.5C+%E2%80%93+summary+for+policymakers)) in response to growing critiques of the IPCC’s reliance on BECCS. The scenario, known as ‘Low Energy Demand’ (LED), accomplishes emissions reductions compatible with 1.5°C by reducing global energy demand by 40 per cent by 2050. In addition to decarbonisation and afforestation, the key feature of this scenario is that global material production and consumption declines significantly: ‘The aggregate total material output decreases by close to 20 per cent from today, one-third due to dematerialization, and two-thirds due to improvements in material efficiency.’ Dematerialisation is accomplished by shifting away from private ownership of key commodities (like cars) towards sharing-based models. LED differentiates between the global North and South. Industrial activity declines by 42 per cent in the North and 12 per cent in the South. With efficiency improvements, this translates into industrial energy demand declining by 57 per cent in the North and 23 per cent in the South.The LED scenario projects continued GDP growth at just over 2 per cent per year, which would make it consistent with green growth theory. However, the empirical basis for this GDP trend is not robust. It is derived from the MESSAGE-Globium model, which calculates GDP from only two inputs: labour supply (population size and productivity) and energy. The low energy demand in the LED scenario does not affect growth because it is offset by efficiency improvements. As the model is insensitive to changes in material throughput, reductions in production and consumption do not affect output. The paper offers no evidence that GDP will continue to grow despite such reductions. Charlie Wilson, one of the paper’s authors, acknowledged that ‘we did not consider broader questions of GDP growth or degrowth, and we did not explicitly report relationships between our scenario and GDP outcomes for this reason.’[16](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)

#### Biodiversity loss at an alarming rate due to neolib business practices cements permanent ecological damage – that’s trainer

#### Disease

#### Globalization and trade increase the risk of fast-spreading epidemics – and vaccines can’t solve

**Daszak et al ‘17**, - President of EcoHealth Alliance, one of the founders of the field of Conservation Medicine, member of the National Academy of Medicine and Chair of the NASEM’s Forum on Microbial Threats, the NRC Advisory Committee to the US Global Change Research Program, the Supervisory Board of the One Health Platform, the One Health Commission Council of Advisors, the CEEZAD External Advisory Board, the Cosmos Club, and the Advisory Council of the Bridge Collaborative. He served on the IOM Committee on global surveillance for emerging zoonoses, the NRC committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity CRC; and has advised the Director for Medical Preparedness Policy on the White House National Security Staff on global health issues. He’s authored over 300 scientific papers and was listed as a Web of Science Highly Cited Researcher in 2018 due to his contributions to identifying the bat origin of SARS, the drivers of Nipah virus emergence, publishing the first global emerging disease ‘hotspots’ map, discovering SADS coronavirus, designing a strategy to identify the number of unknown viruses in wildlife, launching the Global Virome Project, identifying the first case of a species extinction due to disease, and discovering the disease chytridiomycosis as the cause global amphibian declines (Peter Daszak, Tong Wu, Charles Perrings, Ann Kinzig, James P. Collins, Ben A. Minteer, "Economic growth, urbanization, globalization, and the risks of emerging infectious diseases in China: A review” Ambio, February 2017, Volume 46, Issue 1, pp 18–29) //AL

Today, an increasingly urban and interconnected world faces growing threats from emerging infectious diseases (McMichael 2004; Kapan et al. 2006; Bradley and Altizer 2007). This is of particular concern in the developing world, where managing fast-spreading epidemics in the growing number of megacities is a pressing challenge (Rees 2013). Recent epidemics have underscored the importance of linkages between host habitats and the global network of cities. The Ebola virus, for example, has long survived among wildlife reservoirs in the hinterlands of Africa, ‘‘breaking out’’ in towns and cities in conspicuous but otherwise local epidemics. As in earlier outbreaks, the 2014 epidemic is thought to have origins in the consumption of wild animal protein, while its spread occurred in densely populated African cities. The international threat it posed stemmed from the increasing air travel connections between these and other cities around the world.  In the case of arboviruses like Zika, dengue, chikungunya, West Nile, and malaria, whose vectors have found ready habitat in urban areas, the primary mechanism for the spread of disease from one city to the next is international trade and travel (Hay et al. 2005; Tatem et al. 2006; Alirol et al. 2011; Weaver 2013; Kraemer et al. 2015). The same is true of coronaviruses such as Severe Acute Respiratory Syndrome (SARS) and Middle Eastern Respiratory Syndrome (MERS). The latter emerged in Saudi Arabia in 2012, having been transmitted between animal reservoirs such as camels and their human handlers. It has since spread throughout the surrounding region, and travel-related human infections have been recorded in Europe, North America, and East and Southeast Asia (Parlak 2015; Zumla et al. 2015). **Urbanization and globalization have made outbreaks of these diverse zoonoses difficult to control, even with unprecedented levels of international cooperation** (Khan et al. 2013; Weaver 2013; Chan 2014; Kraemer et al. 2015). For most emerging infectious diseases, **prevention is better than** **cure**—ex ante **mitigation of disease risk is more economically efficient than ex post adaptation to an outbreak (**Murphy 1999; Graham et al. 2008; Voyles et al. 2014; Langwig et al. 2015). Among mitigation strategies, vaccination has been a widespread and long-established practice for many DNA viruses such as chicken pox or small pox. However, vaccination remains problematic for most RNA viruses, including Ebola, SARS, and avian influenza, due to their higher mutation rate; vaccination is simply not a feasible way to prevent the emergence of many novel zoonoses, which will inevitably encounter immunologically naı¨ve populations. Therefore, mitigating the risks from emerging and reemerging zoonoses requires preemptive measures against their socioecological drivers (Pike et al. 2014). Identifying areas where the convergence of risk factors is occurring with greatest intensity, and at the largest scales, is a logical first step in the development of a mitigation strategy. In this regard, China may be an important outlier among countries.Assessment of the risks posed by zoonotic diseases requires an understanding of how socioeconomic, and ecological conditions affect two phenomena: emergence (the irruption of a pathogen originating in wildlife or livestock into human populations) and spread (the transmission of disease among both animals and people). In this article, we review the evidence for changes in zoonotic risks in China. More particularly, we show how income growth, urbanization, and globalization affect the likelihood of emergence and spread, using SARS and avian influenza as topical and representative examples, but also referring to other diseases when relevant. We discuss the policy implications of changes in the epidemiological environment in China, and consider how the mitigation of zoonotic risk in China could benefit the global risk environment.

#### Innovation can’t solve – price, low market uptake, and lack of gov support destroy any incentive

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Pharmaceutical companies allocate research funds with the expectation of a return on investment. Company revenues are determined on a price/volume model: Higher volumes or higher prices (or both) yield higher revenues. Most profits are earned during the first years after introduction, especially with legal protection from generic entry. Particularly active areas currently include oncology and hepatitis C, with the introduction of new specialty drugs at very high prices. In contrast, the return on investment is relatively low for antibiotics as a result of low prices, limited market uptake, and modest government financial support. LOW PRICES Antibiotics were the original wonder drugs, but they have never been very expensive. In community settings, some US pharmacies offer generic antibiotics free (or nearly so) to drive traffic to their stores. In US hospitals, antibiotics are generally included within a bundled payment, giving hospitals strong financial incentives to limit the introduction of more expensive drugs unless clinically necessary. In both settings, new antibiotics compete against an array of low-cost generics that remain effective enough to suppress pricing for the vast majority of clinical applications. As a result, antibiotics accounted for 6.4 percent of all US prescriptions in 2013 but only 2.6 percent by value. 9MARKET UPTAKE IS LIMITED Over the past few years US antibiotic prescriptions per capita have declined compared to all prescription drugs (see Exhibit 1). US antibiotic sales peaked in 2005 (see Exhibit 2 ). Most recent antibiotics have been approved on the basis of noninferiority trials 10 and so do not come to market with demonstrated superiority in efficacy or safety. While there is some portfolio value in antibiotic diversity, a true breakout antibiotic product will need evidence of superiority for important unmet medical needs.A recent review of three decades of new molecular entity antibiotic approvals and withdrawals found that many antibiotics approved in the 1980s and 1990s had difficulty competing against already approved drugs. 11 Antibiotics suffered market withdrawals at three times the rate of other drugs. Causes for withdrawal varied, but little evidence supports resistance as a cause since drugs that remain on the market have similar resistance profiles. Interrelated causes included safety problems, lack of superior efficacy compared to existing treatments, and lack of market success.Furthermore, stewardship programs appropriately lead to limits on antibiotic market uptake. 12 Successful antibiotic education 13 and vaccination campaigns 14 have been partially responsible for the reduction in US antibiotic use and would also be expected to restrict the market for new antibiotics.Finally, the value of new antibiotics for resistant diseases is not solely for the patients who actually use the antibiotics. Rather, it is also for everyone in the broader population who does not develop resistant infections because of the well-targeted use of new antibiotics. That public health value is not captured in the willingness to pay on the part of a specific patient or his or her health plan and thus in pricing models.GOVERNMENT FINANCIAL SUPPORT IS NOT GROWING The principal US government financial support for antibiotic research and development is through the National Institutes of Health (NIH) and the Biomedical Advanced Research and Development Authority (BARDA). While the NIH does not publicly categorize spending separately for bacterial resistance, overall spending on antimicrobial resistance is flat in real terms, reflecting secular trends in NIH funding (see Exhibit 3 ). BARDA funding has been important but faces similar challenges, even as the program has become more central to advancing antibiotic development. Funding in Europe has been modest in recent years. 15 Additional government research funding is provided by the Orphan Drug Act of 1983, which supports many drug research and development programs, but it does not appear to be a good fit for antibiotics. While 464 drugs and biologics with orphan drug designations had reached the market as of October 2014, only ten treated bacterial disease, and none of those targeted disease attributable to resistant pathogens identified in the CDC threat assessment (see online Appendix Exhibit A). 16 Of the sixty-seven new molecular entity antibiotics approved by the Food and Drug Administration (FDA) since 1980, only one initially entered the market with orphan drug designation: bedaquiline for multidrug-resistant tuberculosis.Antibiotics face special difficulties in meeting the criterion for orphan drugs—diseases or disorders affecting fewer than 200,000 US residents. 17 The number of US patients currently hospitalized with pathogens such as carbapenem-resistant Enterobacteriaceae falls below the numerical threshold for orphan drug designation. However, lack of diagnostics and empirical administration of study drugs means that most clinical studies cannot focus solely on patients with resistant diseases but rather enroll broader groups of patients. In clinical practice, the lack of rapid diagnostics for many infectious diseases results in empirical prescribing outside the target population, which does not occur in many other orphan diseases such as inborn metabolic diseases. Furthermore, even if antibiotics for resistant diseases could be targeted effectively with better diagnostics, that would likely exacerbate the revenue challenges by reducing the market potential for new antibiotics even more than at present. COMPANIES DO NOT REGARD ANTIBIOTICS AS PROFITABLE For all of these reasons, companies find that the return on investment is relatively low for antibiotics. 18 In a recent analysis for the Department of Health and Human Services (HHS), the Eastern Research Group found expected net present values for several categories of antibiotic research to be remarkably low and in some cases negative. In no case did net present values exceed a target benchmark of $100 million, because of the factors mentioned above, including low prices and slow market uptake. 19 From a commercial standpoint, drug companies might not risk expending capital over the product development cycle if the expected returns from antibiotics are so low but instead may shift funds to other drug categories with higher earning potential. These low antibiotic valuations stand in sharp contrast to the social value of antibiotics and willingness-to-pay estimates, which are much higher. 19

#### Diseases cause extinction – bioweapons and microbe evolution

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In the decades to come, advanced bioweapons could threaten human existence. Although the probability of human extinction from bioweapons may be low, the expected value of reducing the risk could still be large, since such risks jeopardize the existence of all future generations. We provide an overview of biotechnological extinction risk, make some rough initial estimates for how severe the risks might be, and compare the cost-effectiveness of reducing these extinction-level risks with existing biosecurity work. We find that reducing human extinction risk can be more cost-effective than reducing smaller-scale risks, even when using conservative estimates. This suggests that the risks are not low enough to ignore and that more ought to be done to prevent the worst-case scenarios. The authors provide an overview of biotechnological extinction risk, make some rough initial estimates for how severe the risks might be, and compare the cost-effectiveness of reducing these extinction-level risks with existing biosecurity work. They find that reducing human extinction risk can be more cost-effective than reducing smaller-scale risks, even when using conservative estimates suggesting that the risks are not low enough to ignore and that more ought to be done to prevent the worst-case scenarios.How worthwhile is it spending resources to study and mitigate the chance of human extinction from biological risks? The risks of such a catastrophe are presumably low, so a skeptic might argue that addressing such risks would be a waste of scarce resources. In this article, we investigate this position using a cost-effectiveness approach and ultimately conclude that the expected value of reducing these risks is large, especially since such risks jeopardize the existence of all future human lives.Historically, disease events have been responsible for the greatest death tolls on humanity. The 1918 flu was responsible for more than 50 million deaths,1 while smallpox killed perhaps 10 times that many in the 20th century alone.2 The Black Death was responsible for killing over 25% of the European population,3 while other pandemics, such as the plague of Justinian, are thought to have killed 25 million in the 6th century—constituting over 10% of the world's population at the time.4 It is an open question whether a future pandemic could result in outright human extinction or the irreversible collapse of civilization. A skeptic would have many good reasons to think that existential risk from disease is unlikely. Such a disease would need to spread worldwide to remote populations, overcome rare genetic resistances, and evade detection, cures, and countermeasures. Even evolution itself may work in humanity's favor: Virulence and transmission is often a trade-off, and so evolutionary pressures could push against maximally lethal wild-type pathogens.5,6While these arguments point to a very small risk of human extinction, they do not rule the possibility out entirely. Although rare, there are recorded instances of species going extinct due to disease—primarily in amphibians, but also in 1 mammalian species of rat on Christmas Island.7,8 There are also historical examples of large human populations being almost entirely wiped out by disease, especially when multiple diseases were simultaneously introduced into a population without immunity. The most striking examples of total population collapse include native American tribes exposed to European diseases, such as the Massachusett (86% loss of population), Quiripi-Unquachog (95% loss of population), and the Western Abenaki (which suffered a staggering 98% loss of population).9In the modern context, no single disease currently exists that combines the worst-case levels of transmissibility, lethality, resistance to countermeasures, and global reach. But many diseases are proof of principle that each worst-case attribute can be realized independently. For example, some diseases exhibit nearly a 100% case fatality ratio in the absence of treatment, such as rabies or septicemic plague. Other diseases have a track record of spreading to virtually every human community worldwide, such as the 1918 flu,10 and seroprevalence studies indicate that other pathogens, such as chickenpox and HSV-1, can successfully reach over 95% of a population.11,12 Under optimal virulence theory, natural evolution would be an unlikely source for pathogens with the highest possible levels of transmissibility, virulence, and global reach. But advances in biotechnology might allow the creation of diseases that combine such traits. Recent controversy has already emerged over a number of scientific experiments that resulted in viruses with enhanced transmissibility, lethality, and/or the ability to overcome therapeutics.13-17 Other experiments demonstrated that mousepox could be modified to have a 100% case fatality rate and render a vaccine ineffective.18 In addition to transmissibility and lethality, studies have shown that other disease traits, such as incubation time, environmental survival, and available vectors, could be modified as well.19-21Although these experiments had scientific merit and were not conducted with malicious intent, their implications are still worrying. This is especially true given that there is also a long historical track record of state-run bioweapon research applying cutting-edge science and technology to design agents not previously seen in nature. The Soviet bioweapons program developed agents with traits such as enhanced virulence, resistance to therapies, greater environmental resilience, increased difficulty to diagnose or treat, and which caused unexpected disease presentations and outcomes.22 Delivery capabilities have also been subject to the cutting edge of technical development, with Canadian, US, and UK bioweapon efforts playing a critical role in developing the discipline of aerobiology.23,24 While there is no evidence of state-run bioweapons programs directly attempting to develop or deploy bioweapons that would pose an existential risk, the logic of deterrence and mutually assured destruction could create such incentives in more unstable political environments or following a breakdown of the Biological Weapons Convention.25 The possibility of a war between great powers could also increase the pressure to use such weapons—during the World Wars, bioweapons were used across multiple continents, with Germany targeting animals in WWI,26 and Japan using plague to cause an epidemic in China during WWII.27Non-state actors may also pose a risk, especially those with explicitly omnicidal aims. While rare, there are examples. The Aum Shinrikyo cult in Japan sought biological weapons for the express purpose of causing extinction.28 Environmental groups, such as the Gaia Liberation Front, have argued that “we can ensure Gaia's survival only through the extinction of the Humans as a species … we now have the specific technology for doing the job … several different [genetically engineered] viruses could be released”(quoted in ref. 29). Groups such as R.I.S.E. also sought to protect nature by destroying most of humanity with bioweapons.30 Fortunately, to date, non-state actors have lacked the capabilities needed to pose a catastrophic bioweapons threat, but this could change in future decades as biotechnology becomes more accessible and the pool of experienced users grows.31,32What is the appropriate response to these speculative extinction threats? A balanced biosecurity portfolio might include investments that reduce a mix of proven and speculative risks, but striking this balance is still difficult given the massive uncertainties around the low-probability, high-consequence risks. In this article, we examine the traditional spectrum of biosecurity risks (ie, biocrimes, bioterrorism, and biowarfare) to categorize biothreats by likelihood and impact, expanding the historical analysis to consider even lower-probability, higher-consequence events (catastrophic risks and existential risks). In order to produce reasoned estimates of the likelihood of different categories of biothreats, we bring together relevant data and theory and produce some first-guess estimates of the likelihood of different categories of biothreat, and we use these initial estimates to compare the cost-effectiveness of reducing existential risks with more traditional biosecurity measures. We emphasize that these models are highly uncertain, and their utility lies more in enabling order-of-magnitude comparisons rather than as a precise measure of the true risk. However, even with the most conservative models, we find that reduction of low-probability, high-consequence risks can be more cost-effective, as measured by quality-adjusted life year per dollar, especially when we account for the lives of future generations. This suggests that despite the low probability of such events, society still ought to invest more in preventing the most extreme possible biosecurity catastrophes.

#### War

#### Growth causes war – prolonged economic collapse is key – this turns every 1ac impact

**Robinson ‘17**, - professor of sociology, global studies and Latin American studies at the University of California at Santa Barbara who wrote *Global Capitalism and the Crisis of Humanity*. (William I., "Global Capitalist Crisis and Trump's War Drive" Truthout, 4-19-2017, https://truthout.org/articles/global-capitalist-crisis-and-trump-s-war-drive/) //AL

There is **another mechanism** that **has sustained the global economy: militarized accumulation**. Here there is a convergence around the system’s political need for social control and its economic need to perpetuate accumulation. Unprecedented global inequalities can only be sustained by ever more repressive and ubiquitous systems of social control and repression. Yet quite apart from political considerations, the TCC has acquired a vested interest in war, conflict, and repression as a means of accumulation. CIT has **revolutionized warfare** and the modalities of state-organized militarized accumulation, including the military application of vast new technologies and the further fusion of private accumulation with state militarization As war and state-sponsored repression become increasingly privatized, the interests of a broad array of **capitalist groups shift the political, social, and ideological climate toward generating and sustaining social conflict** — **such as in the Middle East** — and in expanding systems of warfare, repression, surveillance and social control. The so-called wars on drugs, terrorism, and immigrants; the construction of border walls, immigrant detention centers, and ever-growing prisons; the installation of mass surveillance systems, and the spread of private security guard and mercenary companies, have all become major sources of profit-making. The US state took advantage of the 9/11 attacks to militarize the global economy. US military spending skyrocketed into the trillions of dollars through the “war on terrorism” and the invasions and occupations of Iraq and Afghanistan. The “creative destruction” of war acted to throw fresh firewood on the smoldering embers of a stagnant global economy. The Pentagon budget increased 91 percent in real terms between 1998 and 2011, and even apart from special war appropriations, it increased by nearly 50 percent in real terms during this period. In the decade from 2001 to 2011 defense industry profits nearly quadrupled. Worldwide, total defense outlays (military, intelligence agencies, Homeland Security/Defense) grew by 50 percent from 2006 to 2015, from $1.4 trillion to $2.03 trillion. The cutting edge of accumulation in the “real economy” worldwide shifted from CIT before the dot-com bust of 1999-2001 to a military-security-industrial-financial complex — itself integrated into the high-tech conglomerate – that has accrued enormous influence in the halls of power in Washington and other political centers around the world. An emergent power bloc bringing together the global financial complex with the military-security-industrial complex appeared to crystallize in the wake of the 2008 collapse. The class interests of the TCC, geo-politics, and economics come together around militarized accumulation. The more the global economy comes to depend on militarization and conflict the greater the drive to war and the higher the stakes for humanity. The day after Donald Trump’s electoral victory, the stock price of Corrections Corporation of America, the largest for-profit immigrant detention and prison company in the United States, soared 40 percent, given Trump’s promise to deport millions of immigrants. **Military contractors** such as Raytheon and Lockheed Martin **report spikes each time there is a new flare-up in** the Middle East **conflict**. Within hours of the April 6 tomahawk missile bombardment of Syria Raytheon stock increased by $1 billion. Hundreds of private firms from around the world have put in bids to construct Trump’s infamous US-Mexico border wall. Populist rhetoric aside, the Trump regime’s economic program constitutes neo-liberalism on steroids. Corporate tax cuts and deregulation will exacerbate overaccumulation and heighten the power bloc’s proclivity for military conflict. **Politicized and increasingly autonomous generals** and retired military officials that occupy numerous posts in the regime **control the US war machine**. The generals may **play a key role in geopolitical conjunctures and in the timing and circumstances around which US intervention and war escalate**. Yet behind the **Trump regime** and the Pentagon, the TCC seeks to **sustain global accumulation through expanding militarization**, conflict, and repression. This gives a built-in war drive to the current course of capitalist globalization. **Only a worldwide push back from below**, and ultimately a program to redistribute wealth and power downward, **can counter the upward spiral of international conflagration.**

#### Empirics Prove - Economic Growth increases war by 35%.

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The results again show that **GDP growth** appears to have a **direct effect on the decisions to enter into war**, which seems to support my theory that it affects decision‐makers’ views about national performance and hence resolve. This direct effect is notable relative to **growth in military expenditures**. Additionally, the only control variable that holds any explanatory power is major power status. The occurrence of war does not even appear to be a function of time; the Peace Years and spline variables are statistically insignificant. Although the magnitude and duration of GDP growth affects the occurrence of war, the time since a state’s past involvement in war has no effect on participation in future wars. War is a complex event to explain, and only the GDP growth variable offers any further explanation than simply that major powers are more war‐prone than minor power states. Table V presents the changes in the probability of a state entering into war as its economy fluctuates in its economic growth. Again, only GDP growth and Major Power are statistically significant. Being a major power increases the risk that a state will become involved in a war in a given year by **248%** compared with minor powers. 12 12 If one divides the sample between major and minor powers, the effect of **GDP growth** affects **positively participation in Fatal MIDs by both major and minor powers**, although the effect is stronger for minor powers. The opposite is true, however, for participation in wars, where the effect of GDP growth is stronger for major powers relative to minor powers. This is logical given that these states possess the capabilities to sustain a conflict beyond 999 battle deaths compared with minor power states. A full standard deviation **increase in economic growth** (moving from 3.7% to 7.9%) **increases the probability that a state will become involved in a war by 34.6%.** Hence, the substantive effect of economic growth is not as strong as the effect of being a major power but it is important nonetheless and offers more explanatory power than the remaining covariates. The theory set forth earlier theorizes that **economic growth increases perceptions of state strength, increasing the likelihood of violent interstate conflicts**. Economic growth appears to **increase the resolve of leaders to stand against challenges** and the **willingness to escalate disputes**. A non-random pattern exists where higher rates of GDP growth over multiple years are positively and significantly related to the **most severe international conflicts**, whereas this is not true for overall conflict initiations. Moreover, growth of military expenditures, as a measure of the war chest proposition, does not offer any explanation for violent interstate conflicts. This is not to say that growth of military expenditures never has any effect on the occurrence of war, although such a link is not generally true in the aggregate using a large sample of states. In comparison, higher rates of economic growth are significantly related to violent interstate conflicts in the aggregate. States with growing economies are more apt to reciprocate military challenges by other states and become involved in violent interstate conflicts.

#### Resource shortages causes war—disputes over mineral and metal reserves cause failed states and SCS conflict

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Renewable energy technologies promise to help our world avert some of the worst impacts of climate change. However, some of the minerals and metals they require could contribute to conflict. In the past, fossil fuels were the primary link between energy and conflict, as control and transport of oil and gas drove political unrest, wars over territory, and interventions by powerful countries concerned with securing their supply chains. However, the energy landscape is changing rapidly, with cleaner sources of electricity swiftly replacing fossil fuels. The energy transition now seems inevitable, with renewable energy technologies forecasted to constitute almost half of global electricity generation by 2050. While the global transition to clean energy promises a more sustainable energy future, the switch also creates new challenges through the control of critical minerals used for clean energy technology. Investment in clean energy technologies totaled over $330 billion in 2017 and is expected to accelerate over the coming decades, which will cause the demand for minerals critical to these technologies to change accordingly. For example, the global lithium-ion battery market could more than quadruple to $93 billion by 2025. Driven by the booming electric vehicle market and expanding energy storage sector, demand will increase for lithium, cobalt, and magnesium. Clean energy minerals and metals, similar to fossil fuels, are **concentrated in certain geographic areas, and may be subject to similar contests over their control**. As the world continues to transition from oil, gas, and coal to solar and wind, policymakers must take careful steps to ameliorate the risk of negative externalities from the changing landscape of mineral extraction. Clean Energy Risks Multiple Forms of Conflict Growth of clean energy technologies may increase the risk of at least three types of conflict: **outbreaks of violence in states with weak institutions, competition over global resource commons, and weaponization of minerals essential to these technologies in trade disputes**. First, **reserves of metals and minerals for clean energy technologies can motivate violent conflict in states with weak institutions and rule of law**. Similar to the “resource curse” of many oil-rich states, developing nations with large natural resource endowments often experience corruption and violence as different groups vie to control wealth-generating extractive operations. For instance, the Democratic Republic of the Congo (DRC) produces more than 60 percent of the world’s cobalt, a key component of lithium-ion batteries for electric vehicles and electricity storage. The country already suffers from widespread violent conflict, perpetuated by mining wealth, that has driven the creation of at least seventy armed groups, resulted in massive humans rights violations, and displaced millions. An **increase in demand for cobalt for electric vehicles and grid-scale battery storage could further intensify conflict in the country.** Second, these **minerals could also increase competition among states over the global commons**. The Arctic Ocean and the South China Sea, two contested maritime areas, both contain considerable mineral and metal deposits along undersea fault lines. As ice retreat opens up more of the Arctic Ocean, exploration for deep-sea deposits of minerals useful for clean energy technology could drive countries that claim territory in the region to assert their claims more forcefully. In the South China Sea, Beijing has begun to develop deep sea mining capacities, which will contribute to its effort to establish control of the mineral-rich seabed. China has demonstrated its willingness to flaunt international law and violate other countries’ sovereign claims to the seabed. Conflict over deep-sea minerals would aggravate these disputes. Finally, China’s hegemony over the global mining operations of many of these critical minerals creates a risk that it will use these elements as trade weapons. China produces 95 percent of rare earth elements and leads production in many other minerals and metals critical to clean energy technologies. This control is highly centralized within specific Chinese companies – one Chinese firm, Tianqi Lithium, controls nearly half of the world’s lithium. As part of China’s strategy to become the “center of the clean energy universe,” these minerals are integral to its economic future. Past trade disputes, including China's withholding of rare earths from Japan in 2010, should cause concern, as they show Beijing is willing to ignore international trade norms surrounding critical metals and minerals. As the trade war between the United States and China escalates, there is a risk that China may leverage these minerals’ geopolitical power and restrict their export to the United States.

### 2NC --- Transition

#### Even if we lose the transition debate we still win – proves economic decline even temporary is key to avoid immediate tipping points, war, and pandemics

#### Transition is possible –

#### Proletariat is disenfranchised with the inequalities of neolib politics – prolonged economic depression causes them to grow disenfranchised and pursue sustainable leftist politics of degrowth – that’s saad and filho 16

#### Even if they don’t perceive degrowth now as an option - A forced transition causes a mindset shift – squo climate change is already proving growth unsustainable

**Kallis et al ‘18**, - \*Autonomous University of Barcelona and ICREA. \*\*Ragnar Nurkse School of Innovation and Governance, Tallinn University of Technology, and Berkman Klein Center for Internet & Society, Harvard University. \*\*\*Institute for Ecological Economy Research. \*\*\*\*College of Liberal Arts, Oregon State University. \*\*\*\*\*Center for Latin American Studies, University of Florida. \*\*\*\*\*\*Konzeptwerk Neue Ökonomie in Leipzig, Germany, and (Giorgos Kallis, Vasilis Kostakis, Steffen Lange, Barbara Muraca, Susan Paulson, and Matthias Schmelzer, "Research On Degrowth" Annual Review of Environment and Resources, Vol. 43, pages 291-316, October 2018) //AL

Degrowth proposals are to a certain extent utopian—there is no “topos” (place) where they fully exist. But are there viable transition pathways toward this vision? Thinking of open and plural utopias helps to free the imagination to conceive worlds that motivate changes in our actions today, producing something different tomorrow, although not necessarily the utopia initially imagined (148). Although some degrowth proposals (76) can be criticized as wishful thinking, sound points for studying and starting transitions are found in real existing societies living without growth (see Section 5) and radical social experiments that embody and anticipate degrowth utopias. What Muraca (133) calls concrete utopias illuminate potential openings for paths forward that are already emerging. The fate of such openings will play out amid coevolutionary processes involving institutional organization, technology, environmental conditions, values, and knowledge (149). Although current worlds seem trapped in continuity, history is rife with surprise, fueled by the incessant creativity of humans and their ability to come up with new ways of seeing the world and new forms of living and producing their societies and their environments (150).From this perspective, recent debates on the possibility of voluntary paths to degrowth versus the more probable event of forced reductions provoked by an involuntary crash (10, 77) is misleading (78). Change is always voluntary and is always enacted through unchosen conditions (such as the availability of fossil fuels or the thermodynamics of production processes). History is shaped by collective action or inaction. **As economic** **growth falters and as the toll of its limits and costs becomes unbearable, a transition in the direction of something akin to degrowth could emerge** from dynamics among unforeseeable reactions, experiments, adaptations, and political struggles. Such a transition does not have to be in the name of degrowth. As with the eco-communes of Barcelona that Cattaneo & Gavaldà (107) studied, the reduction of resource use can be the outcome of broader processes of social transformation driven by an ambition to co-live autonomously and democratically (1).In contexts where **life under growth is already disastrous for many people**, and **threatens to become even more so with climate change and the overshooting of planetary boundaries**, literature reviewed here studies, envisages, and advocates changes in institutions, policies, values, understandings, and everyday modes of living. Without the voluntary work to conceive and embody alternative ideas, explanations, practices, and institutions today, an involuntary end to growth may well lead to a state of continual economic depression in which islands of wealth are sustained in seas of deprivation, without pretense of democracy and social justice.

## Uniqueness

### 2NC --- COVID Proves

#### COVID proves – degrowth is the only way to solve climate change

**Love ‘20**, - cites Maurie Cohen, a professor of sustainability studies at the New Jersey Institute of Technology, and Jason Hickel, an economic anthropologist at the London School of Economics. (Shayla, "COVID-19 Broke the Economy. What If We Don’t Fix It?" Vice, 6-16-2020, https://www.vice.com/en\_us/article/qj4ka5/covid-19-broke-the-economy-what-if-we-dont-fix-it) //AL

Certain researchers have argued that our hyperfocus on economic growth was problematic long before we knew the words SARS-CoV-2 or COVID-19. The "degrowth" movement has advocated for reducing production of goods, working hours, and, inevitably, GDP—all with the end goal of reducing carbon emissions. **With the economy at a standstill, we're being challenged** by some experts **to envision a different kind of economy**—one that could help solve the climate crisis, rather than make it worse. While the pandemic has had a tangible effect on people's ability to work and spend money, it has also led global **carbon emissions** to **fall by more than 8 percent so far**, as Nature reported—three times the yearly emissions of Italy. Emissions **dropped** more than **one billion tonnes** in the first four months of 2020 compared to 2019. This is **close to the emission reductions that are needed to meet the goals of** the 2015 **Paris** climate agreement, and stop the planet from warming more than 1.5 to 2°C. The reduction of consumption, emissions, and lowering of GDP that is happening now is **a side effect of the pandemic, not a sustainable** or desirable **way to slash** carbon **output** because of the loss of human life, strict lockdowns, and shuttering of schools and small businesses we value. But in Future Earth, Maurie Cohen, a professor of sustainability studies at the New Jersey Institute of Technology, wrote that the pandemic, from a sustainability standpoint, **offers a rare window of opportunity** both for quality of life and the habitability of the planet. Rather than aiming to have the economy—and emissions—jump back up after the pandemic is over, it could be a moment to **think about how to keep emissions down as we reopen and rebuild**. That might involve leaving growth behind. What if, instead of going back to work full-time, we decided to work less, buy less, make less, and not fight to raise GDP at any cost?Jason Hickel, an economic anthropologist at the London School of Economics, said that **we need to switch to renewable energy** as quickly as possible, **but** that **it's impossible** to do that **while growing the economy at the same time**. A group of 1**,100 experts from** more than **60 countries** recently **signed a letter proposing guidelines** **to how the economy should be revived, with a focus on climate**, health, and well-being **instead of growth**. The economic hardships we are currently facing could be viewed as an opening to experiment with more progressive policies to ensure people can have access to what they need like universal income or healthcare in a post-growth economy.

## Impacts

### 2NC --- Resources

**Growth causes extinction from resource exhaustion ---**

1. **Finite resources and tipping points**

 [Nafeez **Ahmed 17**] (*Failing States, Collapsing Systems: BioPhysical Triggers of Political Violence,* Executive Director of the Institute for Policy Research and Development, pp. 11-13) Full Date: xx-xx-2017 {PR/MoState} Accessed: 2-20-2019

Today, **human civilization under** late **capitalism maintains its increasing distance from thermodynamic equilibrium** **via the throughput of vast quantities of** increasingly depleted **fossil fuel reserves, along with** other finite and increasingly scarce resources such as **metal ores**, **radionucleotides, rare earth elements**, **phosphate** fertilizer, **arable land**, **and** **fresh water** (Nekola et al. 2013). One indicator of the system’s growing complexity today is the measure of material throughput, or economic growth—Gross Domestic Product (GDP). Under capitalist social-property relations, GDP must continuously increase through the maximization of private sector profits, simply for businesses to survive in the competitive marketplace and for the economy to maintain its ability to meet the consumption requirements of a growing population. However, **as the complexity of human civilization has advanced**, the **continual growth in** material **throughput is correlated with an escalating rate of depletion of energy and raw materials**, as well as an acceleration in the dissipation of energy through intensifying greenhouse gas emissions. Robust scientific assessments now demonstrate that **the continuation of those biophysical processes** of environmental degradation in a business-as-usual scenario **will**, before the end of the twenty-first century, **fundamentally undermine the biophysical basis of human civilization** in its current mode of material organization and structural complexity. Further, the **uncontrolled energy releases generated by these** biophysical **processes are manifested in climate change**, **extreme weather** events, **and** **natural disasters** (Earth System Disruption); **and drives geopolitical competition, social unrest, and violent conflict** (Human System Destabilization). These manifestations of dissipative energy release can be seen as distinctive feedback processes resulting from human civilization’s accelerating exploitation of fossil fuel energy sources within the context of the biophysical limits of the environment. In turn, these two strands of systemic feedbacks—Earth System Disruption (ESD) and Human System Destabilization (HSD)—are occurring within a single, overarching human-environment system, and thus are already inherently interconnected, therefore feeding back into each other. This mutual feedback process creates an amplifying **global systemic feedback** in which: (1) ESD drives HSD, which in turn generates ‘security’ issues perceived through the lens of ‘threat’ and ‘risk’ analysis; (2) this **invites traditional securitized human responses** that focus on the expansion of existing military, political and economic power to stabilize existing structures of authority and advance prevailing mechanisms of energy extraction and mobilization; (3) the entrenchment and expansion of existing structures undermines human civilization’s capacity to pursue structural modifications to ameliorate, mitigate or prevent ESD, thus intensifying ESD; (4) the feedback process continues as ESD drives further HSD. **The trajectory of this amplifying global systemic feedback**, carried to its logical conclusion and assuming no intervening shift, **is simply the protracted, cascading collapse of human civilization** in its current form **toward increasingly less complex, and therefore less resource-intensive configurations**, corresponding to available resources and constrained within the environmental limits imposed by accelerating climate change (Tainter 1990). Within this amplifying global systemic feedback, one fundamental obstacle to the systemic restructuring required to avert this outcome is knowledge access, distribution, and processing. In much the same way that an integral factor in an organism’s capacity to adapt to changing environmental conditions is its genetic ability to absorb environmental information and process it through genetic modification that can result in new adaptive biological configurations, human civilization must be capable of absorbing and processing accurate information about the human-environment system, and converting this into actionable knowledge, in order to be empowered to enact the key structural modifications capable of effecting a phase-shift to a more stable adaptive configuration in relation to the Earth System. The difference here, of course, is that while evolutionary biological genetic modifi cation is a question of random mutations, human civilization consists of a collection of conscious agents who can make deliberative decisions on the basis of the information available to them, which must be integrated into knowledge that is capable of informing adaptive behaviors. This raises the question of a pivotal system- wide structural defi ciency in the knowledge processing capacity of human civilization. In short, inaccurate, misleading or partial knowledge bears a particularly central role in cognitive failures pertaining to the most powerful prevailing human political, economic and cultural structures, which is inhibiting the adaptive structural transformation urgently required to avert collapse. The most obvious locus of this global systemic information defi cit is, of course, the global media system— or perhaps more accurately, the Global Media-Industrial Complex (GMIC), and related organs of communication and transnational information dissemination. The GMIC, in effect, currently operates as the information-knowledge architecture of human civilization. The implications of this analysis are stark: scientific data demonstrates that **the rapid convergence of multiple global crisis in coming years and decades is pushing a vast array of interconnected sub-systems toward a threshold of simultaneous tipping points**. From a complex adaptive systems perspective, **this feedback threshold signifies a global system that is on the brink**, if not in the midst, **of a fundamental phase-shift** to a new structural configuration. However, the evolutionary context of this process suggests that **the nature and outcome of this** global civilizational **phase-shift will determine the ultimate fate of civilization**. **Rapidly changing environmental conditions** and the escalating breach of biophysical limits **are compelling human civilization to either adapt through fundamental structural reorganization,** **or face a cascading and uncontrolled series of structural regressions**.

#### Physical caps – their ev assumes short term and absurd efficiency.

**Hickel and Kallis 19** (Jason, Senior Fellow at the International Inequalities Institute at the London School of Economics, Senior Lecturer at Goldsmiths; Giorgos, ICREA Research Professor in political ecology at ICTA; “Is Green Growth Possible?” 2019, New Political Economy, Volume 25, DOI: 10.1080/13563467.2019.1598964)//ddv -- figures omitted

On a global scale, resource use has been **rising** on a steady trajectory. Krausmann et al. (2009) show that global extraction and consumption of materials (including fossil fuels) increased **8-fold** during the period 1900 to 2005, reaching **59 billion tons per year**, growing at annual rates between 1 per cent and 4 per cent. Giljum et al. (2014) find that global consumption grew by **93.4 per cent** between 1980 and 2009, at an average rate of 2.4 per cent per year, to reach a total of 67.6 billion tonnes.2 Materialflows.net (2015), which is run by the Vienna University of Economics and Business, offers data for the period 1980 to 2013 and shows that global material footprint grew 132 per cent, at an average rate of 2.5 per cent per year, to reach nearly 85 billion tons (Figure 2(a)).

**[FIGURE 1 OMITTED]**

What is the relationship between global GDP and resource use? Krausmann et al. (2009) show that during the twentieth century GDP grew at a faster rate (3 per cent per year) than resource use (2 per cent per year). This represents a relative decoupling or dematerialisation of GDP growth, at a rate of about 1 per cent per year. But this changed in the twenty-first century: the growth rate of global consumption increased between 2000 and 2005, averaging 3.7 per cent per year. As this matched the growth rate of GDP, **no decoupling was achieved**. Giljum et al. (2014) also find that the growth rate of global consumption accelerated in the twenty-first century, averaging 3.4 per cent per year between 2000 and 2009; once again, no decoupling was achieved. Wiedmann’s global data shows a similar trend. Materialflows.net (2015) shows a period of modest growth of global material footprint from 1980 to 2002, at 1.78 per cent per year. As this was slower than the rate of GDP growth, some relative decoupling was achieved. However, the final decade from 2002 to 2013 shows an **acceleration of global material use**, at 3.85 per cent per year.3 Global material use rose **more quickly** than GDP during this decade. In other words, the material intensity of the world economy has been **increasing** in the twenty-first century, **not decreasing**. The authors state: ‘Currently, the world economy is therefore on a path of re-materialization and far away from any – even relative – decoupling.’ (Figure 2(b)).

In sum: global historical trends show relative decoupling but **no evidence** of absolute decoupling, and twenty-first century trends show not greater efficiency but rather **worse efficiency**, with re-coupling occurring. Of course, future trajectories could potentially break with these trends **if we change the composition and technology of the global economy** (Grossman and Krueger 1995). What does the data about future prospects show?

One argument is that resource intensity will diminish as economies shift from manufacturing to services. Historical data do not support this theory, however. As a proportion of world GDP, services have grown from 63 per cent in 1997 to 69 per cent in 2015, according to World Bank data. Yet during this same period global **material use has accelerated**, outstripping global GDP growth. The same is true of high-income nations. Services represent 74 per cent of GDP in high-income nations (up from 69 per cent in 1997), but DMC has not diminished and material footprint is outpacing GDP growth. This may be because services require resource-intensive inputs (in other words, services embody significant amounts of materials), or because the income acquired from selling services is used to purchase resource-intensive consumer goods (Kallis 2017). Another possibility is that the resource intensity of primary and secondary sectors has increased to the point of outstripping any gains made by switching to services. Whatever the cause may be, there is no historical evidence that switching to services will, in and of itself, reduce the material throughput of the global economy.

Another argument is that technological innovation and government policy might drive decoupling in the future. This is the assumption advanced by the World Bank, OECD and UNEP green growth reports. To our knowledge, there are three major studies that examine this possibility on a global scale. We discuss their findings below.

**[FIGURE 2 OMITTED]**

Dittrich et al. (2012) show that a ‘business as usual’ scenario will result in material use rising from 68 billion tons in 2008 to 180 billion tons in 2050. This scenario assumes that global South economies grow to the point where global average per capita consumption in 2030 will equal the OECD’s per capita consumption in 2008. Dittrich et al conclude that this level of resource use is ‘**not an option for the future’**. By contrast, their optimistic scenario assumes (a) medium population growth; (b) that all countries follow best practice in **efficient** resource use; and (c) that reduction of consumption of one material does not require higher consumption of another. In this scenario, resource use reaches 93 billion tons by 2050. This represents relative decoupling, but **no absolute reduction in material use**.

In a second study, Schandl et al. (2016) use a model based on 3 per cent average annual global GDP growth and explore three scenarios between 2010 and 2050. The reference scenario, with no significant change to environmental policies, shows that global resource use grows from 79.4 billion tonnes in 2010 to 183 billion tons in 2050 (similar to the Dittrich et al projection), with slight relative decoupling. The ‘medium efficiency’ scenario, with a carbon price of $25 per ton of CO2 (rising by 4 per cent per year), shows that global resource use still grows steadily over the period, but at about half the rate of global GDP, reaching 130 billion tons by 2050. The ‘high efficiency’ scenario, with a carbon price starting at $50 (rising by 4 per cent per year to $236 by 2050) plus a doubling in the material efficiency of the economy (from historical average improvements of 1.5 per cent per year up to 4.5 per cent per year), shows that global resource use still grows steadily, but at about one-fourth the rate of global GDP, reaching 95 billion tons in 2050 (again, similar to Dittrich et al).

It is important to note that the rate of material efficiency improvements that Schandl et al assume (viz., 4.5 per cent per year) has no empirical basis. They provide no evidence that such a rapid rate is **possible to sustain**. Yet even with this optimistic assumption, Schandl et al conclude: ‘Our research shows that while some relative decoupling can be achieved in some scenarios, none would lead to an absolute reduction in … materials footprint.’

Finally, UNEP has developed a model that explores four different future scenarios, which they discuss in their 2017 report Assessing Global Resource Use (UNEP 2017a, pp. 42–45). Their reference scenario, extrapolating from existing trends, shows that global resource use rises steadily from 85 billion tons in 2015 to 186 billion tons by 2050 (similar to Dittrich et al and Schandle et al). Their high efficiency scenario, by contrast, includes strong policy measures: (a) a global carbon price of $5 per ton of CO2e in 2021, rising by 18.1 per cent per year to $573 in 2050; (b) technological innovation that improves resource efficiency; (c) a resource extraction tax that increases the price of natural resources relative to other inputs; and (d) progressive changes to government regulations, planning and procurement policies (for full details of the model see UNEP 2017b, p. 287 ff). The high efficiency scenario projects that global resource use rises to 132 billion tons in 2050. While some relative decoupling is achieved, there is no absolute reduction in resource use.

The UNEP projections are significantly worse than either Dittrich et al or Schandl et al predict. The model’s authors, Ekins and Hughes, say this because they have incorporated the ‘rebound effect’ into their model (UNEP 2017a, 106 ff.). The rebound effect cancels out some gains in resource efficiency. This happens because such gains reduce the cost of a good or service, freeing up income and increasing effective demand (see Herring and Sorrell 2009 for a review of the literature). In light of these findings, UNEP acknowledges that improvements in resource efficiency will not be enough, in and of themselves, to achieve sustainability, or green growth. ‘Resource efficiency alone is not enough. Productivity gains in today’s linear production system are likely to lead to increased material demand through a combination of economic growth and rebound effects’ (12). Instead, the report acknowledges that something else is needed. They suggest further investigation into the principles of a circular economy: ‘a move from linear to circular material flows through a combination of extended product life cycles, intelligent product design and standardization, reuse, recycling and remanufacturing’ (12). Improving circularity could reduce the ecological impact of material throughput, but only a small fraction of total throughput has circular potential. 44 per cent is comprised of food and energy inputs, which are irreversibly degraded, and 27 per cent is net addition to stocks of buildings and infrastructure (Haas et al. 2015).

These models suggest that absolute decoupling is not feasible on a global scale in the context of **continued economic growth**. These are global studies, however. One might argue that when it comes to the question of whether green growth is possible, we need to look specifically at what highincome nations might be able to achieve, given their greater capacity for technological development. Hatfield-Dodds et al. (2015) have modelled a number of scenarios for Australia from 2015 to 2050, with results that have been widely cited in support of green growth theory. Their most optimistic scenario assumes **high levels of policy-driven efficiency gains**, with an overall **70 per cent drop in material intensity**. They find that ‘substantial economic and physical decoupling is possible,’ with GDP increasing at an average rate of 2.41 per cent per year ‘while associated environmental pressures ease (greenhouse gas emissions, water stress, native habitat loss)’. The model suggests that this can be accomplished without outsourcing environmental impact to other countries.

Hatfield-Dodds et al have come under criticism for this model, however. First, they provide **no evidence** for their assumption that a 70 per cent drop in material intensity is possible. Alexander et al. (2018) have pointed out that this rate of efficiency improvement is **baseless** and **unrealistic**. Indeed, the Australian Bureau of Agricultural Economics (ABARE 2008) reports that efficiency is likely to improve by only 0.2 per cent to 0.5 per cent per year into the future – at most one-eighth of the rate that Hatfield-Dodds assume. Second, even if a 70 per cent drop in material intensity was possible, it appears that any resulting decrease in resource use may only be achieved over the short term. The optimistic scenario in the Hatfield-Dodds et al model shows that material use declines from 2015 to 2040, but begins to increase again thereafter.

Ward et al. (2016) have tested the Hatfield-Dodds model over a longer period, to 2100. They assume a drop in material intensity by 2050 that is 50 per cent more than Hatfield-Dodds et al propose, for an even more optimistic scenario. They find that material extraction declines until 2050 (decoupling at an average rate of about 4 per cent per year) but then flattens off and rises steadily so that by 2100 material use is 20 per cent to 60 per cent higher than its initial value in 2015. While absolute decoupling from material extraction is achieved in the short term, in the longer term material extraction rises by **2.16 per cent per year**, nearly matching the rate of GDP growth. Note that the indicator ‘material extraction’ is different from both DMC and material footprint, in that it does not include imports; the figures for DMC and material footprint for Australia would be significantly higher (Figure 3).

**[FIGURE 3 OMITTED]**

Ward et al. (2016) argue that this resurgence in material extraction happens because resource efficiency cannot improve forever, as eventually it approaches physical limits. They state:

For non-substitutable resources such as land, water, raw materials and energy, we argue that whilst efficiency gains may be possible, there are minimum requirements for these resources that are ultimately governed by **physical realities**: for instance the **photosynthetic limit to plant productivity** and **maximum trophic conversion efficiencies** for animal production govern the minimum land required for agricultural output; **physiological limits** **to crop water use efficiency** govern minimum **agricultural water use, and** the upper limits to energy and material efficiencies govern minimum resource throughput required for economic production.

As the physical limits of resource efficiency are reached, continued GDP growth drives resource use back up. Ward et al conclude that ‘decoupling of GDP growth from resource use, whether relative or absolute, is at best only **temporary**. Permanent decoupling (absolute or relative) **is impossible** for essential, non-substitutable resources because the efficiency gains are ultimately governed by physical limits. Growth in GDP ultimately cannot plausibly be decoupled from growth in material and energy use, demonstrating categorically that GDP growth cannot be sustained indefinitely. It is therefore misleading to develop growth-oriented policy around the expectation that decoupling is possible.’

#### Ignores offsoring.

--- at decoupling

**Sandberg 18** (Maria Sandberg, Hanken School of Economics, Department of Marketing; Kristian Klockars, Social and Moral Philosophy, Faculty of Social Sciences, University of Helsinki; Kristoffer Wilén, Hanken School of Economics, Department of Marketing, “Green growth or degrowth? Assessing the normative justifications for environmental sustainability and economic growth through critical social theory”, Journal of Cleaner Production, 2018, DOI:10.1016/j.jclepro.2018.09.175)

Green growth, and in particular, decoupling, has been criticized for being unsuccessful in stopping environmental degradation (Fletcher and Rammelt, 2017; Jackson, 2016; Kallis, 2017a; Wiedmann et al., 2015). Jackson (2016) analyzed historical data on greenhouse gas emissions, material footprints, and resource extraction. He concluded that there is **no evidence** an absolute decoupling of economic growth from the use of natural resources is taking place. Calculating the material footprint of nations, Wiedmann et al. (2015) showed that no decoupling, absolute or relative, has been achieved in the last **two decades** in developed countries; any previous indications of decoupling were shown to be due to calculations that failed to incorporate the **full environmental impact of increased offshore production**.

Furthermore, Jackson (2016) calculated the required future reductions in resource use per unit of economic activity for a number of different scenarios, showing that absolute decoupling in a growth economy would require improvements in efficiency take place at **unprecedented rates**. Even the most conservative estimates indicated a required rate of at least ten times what has historically been achieved. Jackson concluded that improvements in efficiency are highly unlikely to reach rates high enough to achieve absolute decoupling in the future. It has been argued that efficiency improvements alone are unlikely to reduce the use of natural resources to the extent necessary and at the required time scale (IPCC, 2014) to stop environmental degradation.

#### 50% of emissions can’t be sequestered now – any technological advance will be overwhelmed

**Trainer ’18** (Ted; is a Conjoint Lecturer in the School of Social Sciences, University of New South Wales. PhD from University of Sydney; March 3rd; *The Global Situation, The Sustainable Alternative Society, and The Transition to It*; <http://thesimplerway.info/TSWMain.htm>; accessed 1/9/19; MSCOTT)

Fault 1: THE LIMITS TO GROWTH The most serious **fault** in our society is the commitment to an affluent-industrial-consumer lifestyle and to an economy that must have constant and limitless growth in output. **Our way of life is grossly unsustainable**. Our levels of production and consumption are far too high to be kept up for very long and could never be extended to all people. We are rapidly depleting resources and damaging the environment. Following are some of the main points that support these ‘limits to growth” conclusions. (For a detailed case see TSW, 2018a.) **Rich countries**, with about one-fifth of the world’s people, are consuming about three quarters of the world’s resource production. Our per capita consumption is about 15+ times that of the poorest half of the world’s people. World population will probably reach 9 - **10 billion**, somewhere after 2050. If all those people were to have the present Australian per capita resource consumption, then world production of all resources would have to be about **6 times as great as it is now**. If we tried to raise present world production to that level by 2050 we would by then have **completely exhausted all probably recoverable resources** of one third of the basic mineral items we use. All probably recoverable resources of **coal**, **oil**, **gas**, **tar sand** and **shale oil**, and **uranium** (via burner reactors) would have been **exhausted before 2050**. Resources are becoming **scarcer** and **more costly**, including energy, **minerals**, **food**, **fish**, **water** and **timber**. (Heinberg, 2008.) **Petroleum** appears to be **especially limited**. Supply of conventional crude has probably **peaked**. Investment in oil production has trebled in about a decade, but the amount produced has not increased. The current boom in gas from **fracking is likely to be over in a decade** as wells have been found to decline rapidly. (Ahmed, 2014.) Petroleum is the **most urgent limit** to affluence and growth. It is difficult to see how we can avoid an **extremely disruptive decline** within the next two decades. This would cause catastrophic change in all aspects of consumer society, making travel, transport, trade, tourism, agriculture, etc. very costly and eliminating many activities. If 9 billion people were to use timber at the rich world per capita rate we would need **3.5 times the world's present forest area**. If all 9 billion were to have a rich world diet, which takes about .5 ha of land to produce, we would need 4.5 billion ha of food producing land. But there are only 1.4 billion ha of cropland in use today and this is likely to decrease because **land is being lost**. Ecological resources are being severely depleted. We are losing species, forests, land, coral reefs, grasslands and fisheries at accelerating rates. **Water shortages** are serious and increasing. There are already **food shortages** causing riots in several countries. **Phosphorus** is a worry; supplies might only **last two decades**. Several minerals are becoming quite scarce, including **platinum**, **hafnium**, **indium**, **gallium**, and **copper** and **zinc**. **Helium gas** is also a problem. Virtually all mineral ore grades are falling, deposits are becoming fewer, smaller and less accessible meaning more energy is needed to produce each tonne. The top ten iron ore and bauxite consuming nations have per capita use that is around 65 and 90 times respectively the rates for all the other nations. (Weidmann et al., 2014.) There is obviously no possibility of all people ever rising to anything like present rich world levels of mineral use. Ecological "Footprint" analysis estimates that it takes about 8 ha of productive land to provide water, energy settlement area and food for one person living in Australia. So if 9 billion people were to live as we do in Sydney we would need about 72 billion ha of productive land. But that is about 9 times all the available productive land on the planet. Even now footprint analyses indicate that the world is consuming resources at 1.5 times a sustainable rate. We are doing it by running down the stocks, e.g., we are using forest products faster than forest regrowth could make them available continually, by cutting down the forests. More worrying than the resource limits are the ecological limits. We are seriously damaging the life support systems of the planet, the biological and chemical processes that maintain the conditions all living things need. The World Wildlife Fund says that in general the quality of global ecosystems has deteriorated 30% since about 1970. Among the most worrying ecological problems are, Atmosphere and Climate. Our rate of release of **carbon dioxide** to the atmosphere is set to cause **catastrophic problems** in coming years. There is considerable agreement among climate scientists that we should eliminate all emissions by 2050. There is a strong case that it **will not be possible to do this while maintaining consumer-capitalist society**. Firstly it will not be possible to burn coal and **sequester** the resulting CO2 because only 80-90% of it in power station emissions can be captured for storage, and because the **50% of emissions** from non-stationary sources such as cars **cannot be captured**. Secondly there is a strong case that it **will not be possible to substitute alternative energy sources** for carbon emitting fuels on the scale required. (See below.) The finding by Meinshausen et al. (2009) is widely accepted: for a 75% probability of limiting global warming to 2 degree cumulative CO2 emissions in the period 2000 – 2050 must be less than 1000 GT CO2. Between 2000 and 2010 around 350 GT had been emitted, so the remaining capacity is only 650 GT. Emissions around 2013 were almost 50 GT/y, and increasing. So we have **less than 13 years at this rate** to completely eliminate emissions. But in some **recent years the emission rate has increased** at 3% p.a. (Sorrell, 2012, p.1796. See also Anderson and Bows, 2008.) The Australian per capita emission rate is about the worst in the world … not including imports and exports. In 2004 Australia produced 525 million tonnes of CO2…but in addition the amount in the fuels we exported was 565 million tonnes. To this should be added the carbon emissions created to produce the goods we imported. (Chateau, et al., 2011.) Donald, (2012), found that for the UK carbon in imports was as much as was released domestically. The **depleted ozone layer** is another atmospheric concern. **Biodiversity loss**. We are **eliminating species at an alarming rate**, and seem to be entering a period of massive loss of species, a **sixth era of mass extinction**. The main reason is **loss of habitat**; humans are taking more and more of nature and damaging the rest. **Chemical imbalances and toxicity**. We are **releasing such quantities of many chemicals that the planet’s natural cycles are being disrupted and poisoned**. For instance the huge amount of **artificial nitrogen** entering the environment from fertilizers is causing algal blooms etc. The **phosphorus** cycle is also a concern, also due to the **large amounts released in fertilizers**. Soils are increasingly **acidic** due to artificial fertilizers, and soil carbon levels have been depleted by farming. The **seas are becoming more acidic**, threatening all the organisms with shells. Crib (2014) reports 8% of human deaths are due to poisoning. Vast amounts of plastic are accumulating in the oceans. The reason for all this massive damage to the environment is simply that **there is far too much producing and consuming going on**. This is causing too many resources to be taken from nature and too many wastes to be dumped back into nature. How much will be left for nature if 9 billion rise to live like Americans? These have been some of the main limits to growth arguments which lead to the conclusion that there is no possibility of all people rising to the living standards we take for granted today in rich countries like Australia. The most important point is the **magnitude of the overshoot**. Most people have no idea of how **far beyond sustainable levels of consumption we are**, and **how big the reductions will have to be**. We seem to be around **10 times over some crucial limits**. It is difficult to see how anyone could avoid the conclusion that we should be trying move to far simpler and less resource-expensive lifestyles and systems. The necessary reductions cannot be achieved without **dramatic reductions** in the amount of production and consumption and therefore **economic activity** going on. These limits problems are very **likely to begin to hit us hard in the next decade**, as **petroleum becomes more scarce** and the effects spread through the whole economy. Few people grasp the seriousness of the situation, certainly not within mainstream political, media and academic circles or within the general public. Now add the **absurdly impossible implications of economic growth**. But the foregoing argument has only been that the **present levels of production and consumption are quite unsustainable**. Yet we are determined to increase present living standards and levels of output and consumption, as much as possible and **without any end in sight**. In other words, our supreme national goal is economic growth. Few people seem to recognise the **absurdly impossible consequences of pursing economic growth**. World **GDP is expected to multiply by four by 2050**. (Chateau, J., et al., 2011.) If we Australians have a 3% p.a. increase in output, by 2090 we will be producing 8 times as much every year. If by then all 9 billion people expected had risen to the living standards we would have then, the **total world economic output would be more than 60 times as great as it is today**! Yet **the present level is unsustainable**. COUNTER ARGUMENTS? “De-materialisation”,” **De-coupling**”, the shift to information and services? It is often argued that the economy can continue to grow in the service and information sectors, without increasing use of materials and energy. This is also known as the “de-materialisation” or “de-coupling” thesis. It is now clear that **this is not what is happening**. Over the last thirty years growth in economic output has been **accompanied by increase in use of materials and energy**, not decrease, let alone by anything like the **dramatic reduction required**. (Alexander, 2014, TSW, 2018b.) But can’t technical advance solve the problems? Most people are "**technical fix optimists**", assuming that technical advance will make it unnecessary for us to change to simpler lifestyles and very different systems such as a zero-growth economy. They believe that smarter technology and more recycling, greater energy efficiency, etc., will enable growth of GDP and higher "living standards" with reduced total resource use and environmental impact. There are miraculous technical advances in many fields all the time, but the de-coupling evidence is that they are not enabling reductions in overall resource demands or environmental impacts. Note that if there is a commitment to constant, limitless increase in economic output then reductions that can be achieved by **technical advance are soon likely to be overwhelmed**. For instance if we cut use and impacts per unit of GDP in half, but continued with 3% p.a. economic growth, then **in 23 years the resource demands and impacts would be back up to where they were before the cuts, and would be twice as great in another 23 years**. Again the evidence on de-coupling is that **no progress is being made** on reducing demands and impacts. The ‘tech-fix” faith assumes there is no need to rethink consumer-capitalist society, because technical advances will enable us all to go on living more and more affluently, for ever. The Simpler Way view is that the enormous problems that consumer-capitalist society constantly creates are far too big for technical advance to solve. Finally, if technical advance is going to solve our big problems, **when is it going to start doing so?** They are all **rapidly getting worse at present**. Could renewable energy solve the problem? There is a strong case that **it will not be possible/affordable to run all functions in our present energy-intensive consumer-capitalist society on renewable energy**. (For the detailed case see Trainer, 2017.) The first of the two main problems is that because the sun and wind are very intermittent (… and might make no contribution for two weeks in a row in a European winter) a probably **unaffordable amount of costly redundant or excess plant and/or energy storage capacity would be needed**. The second problem is that the **world has far too little biomass to produce enough liquid fuel**. Note that **even if we solved the energy problem many other serous global problems being caused by overconsumption etc. would remain**.

#### Stopping growth solves extinction from eco collapse – decoupling is impossible even under perfect conditions, and transition dangers are overhyped

**Hickel 18** [Jason Hickel is an anthropologist, author, and a fellow of the Royal Society of Arts. Why Growth Can’t Be Green. Foreign Policy Magazine. September 12, 2018. https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/]

Warnings about **ecological breakdown** have become ubiquitous. Over the past few years, major newspapers, including the Guardian and the New York Times, have carried alarming stories on **soil depletion**, **defo**restation, and the collapse of **fish stocks** and **insect populations**. These crises are being **driven by** global economic **growth**, and its accompanying consumption, which is **destroying the** Earth’s **biosphere** and **blowing past** key **planetary boundaries** that scientists say must be respected to avoid **triggering collapse**.

Many policymakers have responded by pushing for what has come to be called “**green growth**.” All we need to do, they argue, is invest in more efficient technology and introduce the right incentives, and we’ll be able to keep growing while simultaneously reducing our impact on the natural world, which is already at an unsustainable level. In technical terms, the goal is to achieve “**absolute decoupling**” of GDP from the total use of natural resources, according to the U.N. definition.

It sounds like an elegant solution to an otherwise catastrophic problem. There’s just one hitch: **New evidence** suggests that green growth isn’t the panacea everyone has been hoping for. In fact, it **isn’t** even **possible**.

Green growth first became a buzz phrase in 2012 at the United Nations Cosnference on Sustainable Development in Rio de Janeiro. In the run-up to the conference, the World Bank, the Organization for Economic Cooperation and Development, and the U.N. Environment Program all produced reports promoting green growth. Today, it is a core plank of the U.N. Sustainable Development Goals.

But the promise of green growth turns out to have been based more on wishful thinking than on evidence. In the years since the Rio conference, three **major empirical studies** have arrived at the **same** rather troubling **conclusion**: **Even under** the **best conditions**, absolute decoupling of GDP from resource use is not possible on a global scale.

A team of scientists led by the German researcher Monika Dittrich first raised doubts in 2012. The group ran a sophisticated computer model that predicted what would happen to global resource use if economic growth continued on its current trajectory, increasing at about 2 to 3 percent per year. It found that human consumption of natural resources (including fish, livestock, forests, metals, minerals, and fossil fuels) would rise from 70 billion metric tons per year in 2012 to **180** billion metric tons per year by 2050. For reference, a sustainable level of resource use is about 50 billion metric tons per year—a boundary we breached back in 2000.

The team then reran the model to see what would happen if every nation on Earth **immediately adopted best practice** in efficient resource use (an extremely optimistic assumption). The results improved; resource consumption would hit only **93** billion metric tons by 2050. But that is still a lot more than we’re consuming today. Burning through all those resources could hardly be described as absolute decoupling or green growth.

In 2016, a second team of scientists tested a different premise: one in which the world’s nations all agreed to go above and beyond existing best practice. In their best-case scenario, the researchers assumed a tax that would raise the global price of carbon from $50 to $236 per metric ton and imagined technological innovations that would double the efficiency with which we use resources. The results were almost exactly the same as in Dittrich’s study. Under these conditions, if the global economy kept growing by 3 percent each year, we’d still hit about **95** billion metric tons of resource use by 2050. Bottom line: no absolute decoupling.

Finally, last year the U.N. Environment Program—once one of the main cheerleaders of green growth theory—weighed in on the debate. It tested a scenario with **carbon priced** at a whopping $573 per metric ton, slapped on a resource **extraction tax**, and assumed **rapid tech**nological **innovation** spurred by **strong government support**. The result? **We hit 132** billion metric tons by 2050. This finding is worse than those of the two previous studies because the researchers accounted for the “**rebound effect**,” whereby improvements in **resource efficiency drive down prices** and cause **demand to rise**—thus **canceling out** some of the **gains**.

Study after study shows the same thing. Scientists are beginning to realize that there are physical limits to how efficiently we can use resources. Sure, we might be able to produce cars and iPhones and skyscrapers more efficiently, but we can’t produce them out of thin air. We might shift the economy to services such as education and yoga, but even universities and workout studios require material inputs. Once we reach the limits of efficiency, pursuing any degree of economic growth drives resource use back up.

These problems throw the entire concept of green growth into doubt and necessitate some radical rethinking. Remember that each of the three studies used highly optimistic assumptions. We are nowhere near imposing a global carbon tax today, much less one of nearly $600 per metric ton, and resource efficiency is currently getting worse, not better. Yet the studies suggest that even if we do everything right, decoupling economic growth with resource use will remain elusive and our environmental problems will continue to worsen.

Preventing that outcome will require a whole new paradigm. High taxes and technological innovation will help, but they’re not going to be enough. The only realistic shot humanity has at averting ecological collapse is to impose hard caps on resource use, as the economist Daniel O’Neill recently proposed. Such caps, enforced by national governments or by international treaties, could ensure that we do not extract more from the land and the seas than the Earth can safely regenerate. We could also ditch GDP as an indicator of economic success and adopt a more balanced measure like the genuine progress indicator (GPI), which accounts for pollution and natural asset depletion. Using GPI would help us maximize socially good outcomes while minimizing ecologically bad ones.

But there’s no escaping the obvious conclusion. Ultimately, bringing our civilization back within planetary boundaries is going to require that we **liberate ourselves** from our **dependence on economic growth**—starting with **rich nations**. This might **sound scarier than it really is**. Ending growth doesn’t mean shutting down economic activity—it simply means that next year we can’t produce and consume more than we are doing this year. It might also mean shrinking certain sectors that are particularly damaging to our ecology and that are unnecessary for human flourishing, such as advertising, commuting, and single-use products.

But ending growth doesn’t mean that living standards need to take a hit. Our planet provides more than enough for all of us; the problem is that its resources are not equally distributed. We can improve people’s lives right now simply by sharing what we already have more fairly, rather than plundering the Earth for more. Maybe this means better public services. Maybe it means basic income. Maybe it means a shorter working week that allows us to scale down production while still delivering full employment. Policies such as these—and countless others—will be **crucial** to not only **surviving the 21st century** but also flourishing in it.

### 2NC --- War

#### Growth causes war

**Robinson ‘17**, - professor of sociology, global studies and Latin American studies at the University of California at Santa Barbara who wrote *Global Capitalism and the Crisis of Humanity*. (William I., "Global Capitalist Crisis and Trump's War Drive" Truthout, 4-19-2017, https://truthout.org/articles/global-capitalist-crisis-and-trump-s-war-drive/) //AL

There is **another mechanism** that **has sustained the global economy: militarized accumulation**. Here there is a convergence around the system’s political need for social control and its economic need to perpetuate accumulation. Unprecedented global inequalities can only be sustained by ever more repressive and ubiquitous systems of social control and repression. Yet quite apart from political considerations, the TCC has acquired a vested interest in war, conflict, and repression as a means of accumulation. CIT has **revolutionized warfare** and the modalities of state-organized militarized accumulation, including the military application of vast new technologies and the further fusion of private accumulation with state militarization As war and state-sponsored repression become increasingly privatized, the interests of a broad array of **capitalist groups shift the political, social, and ideological climate toward generating and sustaining social conflict** — **such as in the Middle East** — and in expanding systems of warfare, repression, surveillance and social control. The so-called wars on drugs, terrorism, and immigrants; the construction of border walls, immigrant detention centers, and ever-growing prisons; the installation of mass surveillance systems, and the spread of private security guard and mercenary companies, have all become major sources of profit-making. The US state took advantage of the 9/11 attacks to militarize the global economy. US military spending skyrocketed into the trillions of dollars through the “war on terrorism” and the invasions and occupations of Iraq and Afghanistan. The “creative destruction” of war acted to throw fresh firewood on the smoldering embers of a stagnant global economy. The Pentagon budget increased 91 percent in real terms between 1998 and 2011, and even apart from special war appropriations, it increased by nearly 50 percent in real terms during this period. In the decade from 2001 to 2011 defense industry profits nearly quadrupled. Worldwide, total defense outlays (military, intelligence agencies, Homeland Security/Defense) grew by 50 percent from 2006 to 2015, from $1.4 trillion to $2.03 trillion. The cutting edge of accumulation in the “real economy” worldwide shifted from CIT before the dot-com bust of 1999-2001 to a military-security-industrial-financial complex — itself integrated into the high-tech conglomerate – that has accrued enormous influence in the halls of power in Washington and other political centers around the world. An emergent power bloc bringing together the global financial complex with the military-security-industrial complex appeared to crystallize in the wake of the 2008 collapse. The class interests of the TCC, geo-politics, and economics come together around militarized accumulation. The more the global economy comes to depend on militarization and conflict the greater the drive to war and the higher the stakes for humanity. The day after Donald Trump’s electoral victory, the stock price of Corrections Corporation of America, the largest for-profit immigrant detention and prison company in the United States, soared 40 percent, given Trump’s promise to deport millions of immigrants. **Military contractors** such as Raytheon and Lockheed Martin **report spikes each time there is a new flare-up in** the Middle East **conflict**. Within hours of the April 6 tomahawk missile bombardment of Syria Raytheon stock increased by $1 billion. Hundreds of private firms from around the world have put in bids to construct Trump’s infamous US-Mexico border wall. Populist rhetoric aside, the Trump regime’s economic program constitutes neo-liberalism on steroids. Corporate tax cuts and deregulation will exacerbate overaccumulation and heighten the power bloc’s proclivity for military conflict. **Politicized and increasingly autonomous generals** and retired military officials that occupy numerous posts in the regime **control the US war machine**. The generals may **play a key role in geopolitical conjunctures and in the timing and circumstances around which US intervention and war escalate**. Yet behind the **Trump regime** and the Pentagon, the TCC seeks to **sustain global accumulation through expanding militarization**, conflict, and repression. This gives a built-in war drive to the current course of capitalist globalization. **Only a worldwide push back from below**, and ultimately a program to redistribute wealth and power downward, **can counter the upward spiral of international conflagration.**

#### Economic Growth increases war by 35%.

**Boehmer 8** Ph.D. in Political Science a fellow at UTEP’s Center for Excellence in Teaching and Learning (Charles R. Boehmer, 6-30-2008, ECONOMIC GROWTH AND VIOLENT INTERNATIONAL CONFLICT: 1875–1999, <https://www-tandfonline> com.proxy.lib.umich.edu/doi/full/10.1080/10242690903568801?scroll=top&needAccess=true, Date Accessed: 7-8-2018)//LB

The results again show that **GDP growth** appears to have a **direct effect on the decisions to enter into war**, which seems to support my theory that it affects decision‐makers’ views about national performance and hence resolve. This direct effect is notable relative to **growth in military expenditures**. Additionally, the only control variable that holds any explanatory power is major power status. The occurrence of war does not even appear to be a function of time; the Peace Years and spline variables are statistically insignificant. Although the magnitude and duration of GDP growth affects the occurrence of war, the time since a state’s past involvement in war has no effect on participation in future wars. War is a complex event to explain, and only the GDP growth variable offers any further explanation than simply that major powers are more war‐prone than minor power states. Table V presents the changes in the probability of a state entering into war as its economy fluctuates in its economic growth. Again, only GDP growth and Major Power are statistically significant. Being a major power increases the risk that a state will become involved in a war in a given year by **248%** compared with minor powers. 12 12 If one divides the sample between major and minor powers, the effect of **GDP growth** affects **positively participation in Fatal MIDs by both major and minor powers**, although the effect is stronger for minor powers. The opposite is true, however, for participation in wars, where the effect of GDP growth is stronger for major powers relative to minor powers. This is logical given that these states possess the capabilities to sustain a conflict beyond 999 battle deaths compared with minor power states. A full standard deviation **increase in economic growth** (moving from 3.7% to 7.9%) **increases the probability that a state will become involved in a war by 34.6%.** Hence, the substantive effect of economic growth is not as strong as the effect of being a major power but it is important nonetheless and offers more explanatory power than the remaining covariates. The theory set forth earlier theorizes that **economic growth increases perceptions of state strength, increasing the likelihood of violent interstate conflicts**. Economic growth appears to **increase the resolve of leaders to stand against challenges** and the **willingness to escalate disputes**. A non-random pattern exists where higher rates of GDP growth over multiple years are positively and significantly related to the **most severe international conflicts**, whereas this is not true for overall conflict initiations. Moreover, growth of military expenditures, as a measure of the war chest proposition, does not offer any explanation for violent interstate conflicts. This is not to say that growth of military expenditures never has any effect on the occurrence of war, although such a link is not generally true in the aggregate using a large sample of states. In comparison, higher rates of economic growth are significantly related to violent interstate conflicts in the aggregate. States with growing economies are more apt to reciprocate military challenges by other states and become involved in violent interstate conflicts.

#### Most expansive statistical data proves peace during decline

**Clary 15.** PhD in political science from MIT, MA in national security affairs, postdoctoral fellow, Watson Institute for International Studies, Brown University, Christopher, “Economic Stress and International Cooperation: Evidence from International Rivalries”, 4/25/15

Do economic downturns generate pressure for diversionary conflict? Or might downturns encourage austerity and economizing behavior in foreign policy? This paper provides new evidence that **economic stress is associated with conciliatory policies** between strategic rivals. For states that view each other as military threats, the biggest step possible toward bilateral cooperation is to terminate the rivalry by taking political steps to manage the competition. Drawing on data from **109 distinct rival dyads** since 1950, **67 of which terminated**, the evidence suggests rivalries were approximately twice as likely to terminate during economic downturns than they were during periods of economic normalcy. This is true controlling for **all of the main alternative explanations** for peaceful relations between foes (democratic status, nuclear weapons possession, capability imbalance, common enemies, and international systemic changes), as well as many other possible confounding variables. This research questions existing theories claiming that economic downturns are associated with diversionary war, and instead argues that in certain circumstances **peace may result from economic troubles**. Defining and Measuring Rivalry and Rivalry Termination I define a rivalry as the perception by national elites of two states that the other state possesses conflicting interests and presents a military threat of sufficient severity that future military conflict is likely. Rivalry termination is the transition from a state of rivalry to one where conflicts of interest are not viewed as being so severe as to provoke interstate conflict and/or where a mutual recognition of the imbalance in military capabilities makes conflict-causing bargaining failures unlikely. In other words, rivalries terminate when the elites assess that the risks of military conflict between rivals has been reduced dramatically. This definition draws on a growing quantitative literature most closely associated with the research programs of William Thompson, J. Joseph Hewitt, and James P. Klein, Gary Goertz, and Paul F. Diehl.1 My definition conforms to that of William Thompson. In work with Karen Rasler, they define rivalries as situations in which “[b]oth actors view each other as a significant political-military threat and, therefore, an enemy.”2 In other work, Thompson writing with Michael Colaresi, explains further: The presumption is that decisionmakers explicitly identify who they think are their foreign enemies. They orient their military preparations and foreign policies toward meeting their threats. They assure their constituents that they will not let their adversaries take advantage. Usually, these activities are done in public. Hence, we should be able to follow the explicit cues in decisionmaker utterances and writings, as well as in the descriptive political histories written about the foreign policies of specific countries.3 Drawing from available records and histories, Thompson and David Dreyer have generated a universe of strategic rivalries from 1494 to 2010 that serves as the basis for this project’s empirical analysis.4 This project measures rivalry termination as occurring on the last year that Thompson and Dreyer record the existence of a rivalry.5 Why Might Economic Crisis Cause Rivalry Termination? Economic crises lead to conciliatory behavior through five primary channels. (1) Economic crises lead to **austerity pressures**, which in turn incent leaders to search for ways to cut defense expenditures. (2) Economic crises also encourage **strategic reassessment**, so that leaders can argue to their peers and their publics that defense spending can be arrested without endangering the state. This can lead to threat deflation, where elites attempt to downplay the seriousness of the threat posed by a former rival. (3) If a state faces multiple threats, economic crises provoke elites to consider **threat prioritization**, a process that is postponed during periods of economic normalcy. (4) Economic crises increase the political and economic benefit from **international economic cooperation**. Leaders seek foreign aid, enhanced trade, and increased investment from abroad during periods of economic trouble. This search is made easier if tensions are reduced with historic rivals. (5) Finally, during crises, elites are more prone to select leaders who are perceived as capable of resolving economic difficulties, permitting the emergence of leaders who hold heterodox foreign policy views. Collectively, these mechanisms make it much more likely that a leader will prefer conciliatory policies compared to during periods of economic normalcy. This section reviews this causal logic in greater detail, while also providing historical examples that these mechanisms recur in practice.

### 2NC --- Phosphorus

#### Phosphorous --- degrowth key to solve phosphorous depletion --- causes extinction and turns war

**Faradji 16** Charly Faradji 16, Doctor of Philosophy Student, Chemistry, University of Bristol, “How the great phosphorus shortage could leave us short of food,” 2/17/16, https://phys.org/news/2016-02-great-phosphorus-shortage-short-food.html

It's not as well-known as the other issues, but phosphorus depletion is no less significant. After all, we could live without cars or unusual species, but if phosphorus ran out we'd have to **live without food**.

Phosphorus is an **essential nutrient for all forms of life**. It is a key element in our DNA and all living organisms require daily phosphorus intake to produce energy. It cannot be replaced and there is no synthetic substitute: without phosphorus, there is no life.

Our dependence began in the mid-19th century, after farmers noticed spreading phosphorus-rich guano (bird excrement) on their fields led to impressive improvements in crop yields. Soon after, mines opened up in the US and China to extract phosphate ore – rocks which contain the useful mineral. This triggered the current use of mineral fertilisers and, without this industrial breakthrough, humanity could only produce half the food that it does today.

Fertiliser use has quadrupled over the past half century and will **continue rising** as the population expands. The **growing wealth of developing countries** allows people to afford more meat which has a "phosphorus footprint" 50 times higher than most vegetables. This, together with the increasing usage of biofuels, is estimated to double the demand for phosphorus fertilisers by 2050.

Today phosphorus is also used in pharmaceuticals, personal care products, flame retardants, catalysts for chemical industries, building materials, cleaners, detergents and food preservatives.

Phosphorus is not a renewable resource

Reserves are limited and not equally spread over the planet. The only large mines are located in Morocco, Russia, China and the US. Depending on which scientists you ask, the world's phosphate rock reserves will last for another 35 to 400 years – though the more optimistic assessments rely on the discovery of new deposits.

It's a big concern for the EU and other countries without their own reserves, and phosphorus depletion could lead to **geopolitical tensions**. Back in 2008, when fertiliser prices sharply increased by 600% and directly influenced food prices, there were **violent riots** in 40 different developing countries.

Phosphorus also harms the environment. Excessive fertiliser use means it leaches from agricultural lands into rivers and eventually the sea, leading to so-called dead zones where most fish can't survive. Uninhibited algae growth caused by high levels of phosphorus in water has already created more than 400 coastal death zones worldwide. Related human poisoning costs US$2.2 billion dollars annually in the US alone.

With the increasing demand for phosphorus leading to massive social and environmental issues, it's time we looked towards more sustainable and responsible use.

There is still hope

In the past, the phosphorus cycle was closed: crops were eaten by humans and livestock while their faeces were used as natural fertilisers to grow crops again.

These days, the cycle is broken. Each year 220m tonnes of phosphate rocks are mined, but only a negligible amount makes it back into the soil. Crops are transported to cities and the waste is not returned to the fields but to the sewage system, which mainly ends up in the sea. A cycle has become a linear process.

We could reinvent a modern phosphorus cycle simply by **dramatically reducing our consumption**. After all, less than a third of the phosphorus in fertilisers is actually taken up by plants; the rest accumulates in the soil or is washed away. To take one example, in the Netherlands there is enough phosphorus in the soil today to supply the country with fertiliser for the next 40 years.

### 2NC --- Chem Emissions

#### Chemical emissions --- they cause extinction

**Cribb, 17**—principal of JCA, Fellow of the Australian Academy of Technological Sciences and Engineering, former Director, National Awareness, CSIRO (Julian, “The Poisoner,” *Surviving the 21st Century* Chapter 6)

There are two essential points about the Earthwide chemical flood. First it is **quite new**. It began with the industrial revolution of the late nineteenth century, but expanded dramatically in the wake of the two world wars—where chemicals were extensively used in munitions—and has exploded in deadly earnest in the past 50 years, attaining a **new crescendo** in the early twenty-first century. It is something our ancestors never faced—and to which we, in consequence, **lack any protective adaptations** which might otherwise have evolved due to constant exposure to poisons. Second, the toxic flood is, for the most part, **preventable**. It is not compulsory—but is an **unwanted by-product** of **economic growth**. Though driven by powerful industries and interests, it still lies within the powers and rights of citizens, consumers and their governments to demand it be curtailed or ended and to encourage industry to safer, healthier products and production systems. The issue is whether, or not, a wise humanity would choose to continue poisoning our children, ourselves and our world. Regulatory Failure Despite the fact that around 2000 new chemicals are released onto world markets annually, most have not received proper health, safety or environmental screening—especially in terms of their impact on babies and small children. Regulation has so far **failed** to make **any serious curtailment** of this flood: only 21 out of 144,000 known chemicals have been banned internationally, and this has not eliminated their use. At such a rate of progress it will take us **more than 50,000 years** to **identify** and **prohibit** or **restrict** all the chemicals which do us harm. Even then, bans will only apply in a handful of well-regulated countries, and **will not protect the Earth system** nor **humanity at large**. Clearly, national regulation holds few answers to what is now an out-of-control global problem. Furthermore, the chemical industry is **relocating** from the developed world (where it is quite well regulated and observes its own ethical standards) and into developing countries, mainly in Asia, where it is largely beyond the reach of either ethics or the law. However, its toxic emissions return to citizens in well-regulated countries via **wind**, **water**, **food**, **wildlife**, **consumer goods**, **industrial products** and **people**. The bottom line is that it doesn’t matter how good your country’s regulations are: you and your family are still exposed to a growing global flood of toxins from which even a careful diet and sensible consumer choices cannot fully protect you. The wake-up call to the world about the risks of chemical contamination was issued by American biologist Rachel Carson when she published Silent Spring in 1962, in which she warned specifically about the impact of certain persistent pesticides used in agriculture. Since her book came out, the volume of pesticide use worldwide has increased 30-fold, to around four million tonnes a year in the mid-2010s. Since the modern chemical age began there has been a string of high-profile chemical disasters: Minamata, the Love Canal, Seveso, Bhopal, Flixborough, Oppau, Toulouse, Hinkley, Texas City, Jilin, Tianjin. Most of these display a familiar pattern of unproductive confrontation between angry citizens, industry and regulators, involving drawn-out legal battles that deliver justice to nobody. By their spectacular and local nature, such events serve to distract from the far larger, more insidious and ubiquitous, universal toxic flood. Chemists and chemical makers often claim that their products are ‘safe’ because individual exposure (e.g. in a given product, like a serve of food) is too low to result in a toxic dose, a theory first put forward by the mediaeval scholar Paracelsus in the sixteenth century. This ‘dose related’ argument is disingenuous, if not dishonest—as modern chemists well know—for the following reasons: Most chemicals target a receptor or receptors on certain of your body cells, to cause harm. There may be not one, but hundreds or even thousands of different chemicals all targeting the same receptor, so a particular substance may contribute an unknowable fraction to an overall toxic dose. That does not make it ‘safe’. Chemicals not known to be poisonous in small doses on their own can combine with other substances in water, air, food or your body to create a toxin. No manufacturer can truthfully assert this will not happen to their products. Chemical toxicity is a function of both dose and the length of time you are exposed to it. In the case of persistent chemicals and heavy metals, this exposure may occur over days, months, years, even a lifetime in some cases. Tiny doses may thus accumulate into toxic ones. Most chemical toxicity is still measured on the basis of an exposed adult male. Babies and children being smaller and using much more water, food and air for their bodyweight, are therefore more at risk of receiving a poisonous dose than are adults. Chemicals and minerals are valuable and extremely useful. They do great good, save many lives and much money. No-one is suggesting they should all be banned. But their value may be for nothing if the current uncontrolled, unmonitored, unregulated and unconscionable mass release and planetary saturation continues. Chemical Extinction Two billion years ago, excessive production of one particular poisonous chemical by the inhabitants of Earth caused a colossal die-off and threatened the extermination of all life. That chemical was oxygen and it was excreted by the blue-green algae which then dominated the planet, as part of their photosynthetic processes. After several hundred million of years, the planet’s physical ability to soak up the surplus O2 in iron formations, oceans and sediments had reached saturation and the gas began to poison the existing life. This event was known as the ‘oxygen holocaust’, and is probably the nearest life on Earth has ever come to **complete disaster** before the present (Margulis and Sagan 1986). Since it developed slowly, over tens of millions of years, the poisonous atmosphere permitted some of these primitive organisms to evolve a tolerance to O2—and this in time led to the rise of oxygen-dependent species such as fish, mammals and eventually, us. The takehome learning from this brush with total annihilation is that it is possible for living creatures to **pollute themselves into oblivion**, if they don’t take care to avoid it or rapidly adapt to the new, toxic environment. It’s a message that humans, with our colossal planetary chemical impact, would do well to ponder. While it is unlikely that human chemical emissions alone could reach such a volume and toxic state as to directly threaten our entire species with extinction (other than through carbon emissions in a runaway global warming event) or even the collapse of civilisation, it is likely they will emerge as a serious contributing factor during the twenty-first century in combination with other factors such as war, climate change, pandemic disease and ecosystem breakdown. Credible ways in which man-made chemicals might **imperil the human future** include: **Undermining the immune systems**, physical and mental health of the population through growing exposure to toxins **Reducing the intelligence** of current and future generations through the action of nerve poisons on the developing brains and central nervous systems of children, rendering humanity **less able** to **solve its problems** and **adapt to major changes**; and by increasing the level of **violent crime** and **conflict** in society, which is closely linked to lower IQ. Bringing down the economy through the massive healthcare costs of having to nurse, treat and maintain a growing proportion of the population disabled by lifelong chronic chemical exposure. By **poisoning the ecosystem services**—clean air, water, soil, plants, insects and wildlife—on which humanity **depends for its own survival** and thereby contributing to potential **global ecosystem breakdown** By augmenting the **global arsenal of weapons of mass destruction** and hence the **risk of their use** by **nations** or **uncontrollable fanatics**.

### 2NC --- Soil Health

#### Soil --- growth destroys it --- that causes extinction

**Monbiot 15**

George Monbiot 15, author and investigative reporter, “We’re treating soil like dirt. It’s a fatal mistake, as our lives depend on it,” 3/25/15, <https://www.theguardian.com/commentisfree/2015/mar/25/treating-soil-like-dirt-fatal-mistake-human-life>

Imagine a wonderful world, a planet on which there was **no threat of climate breakdown**, no loss of freshwater, no antibiotic resistance, no obesity crisis, **no terrorism, no war**. Surely, then, we would be out of major danger? Sorry. **Even if everything else were miraculously fixed, we’re finished** if we don’t address an issue considered so marginal and irrelevant that you can go for months without seeing it in a newspaper.

It’s literally and – it seems – metaphorically, beneath us. To judge by its absence from the media, most journalists consider it unworthy of consideration. But all human life depends on it. We knew this long ago, but somehow it has been forgotten. As a Sanskrit text written in about 1500BC noted: “Upon this handful of soil our survival depends. Husband it and it will grow our food, our fuel and our shelter and surround us with beauty. Abuse it and the soil will collapse and die, taking humanity with it.”

The issue hasn’t changed, but we have. Landowners around the world are now engaged in an orgy of soil destruction so intense that, according to the UN’s Food and Agriculture Organisation, the world on average has just **60 more years of growing crops.** Even in Britain, which is spared the tropical downpours that so quickly strip exposed soil from the land, Farmers Weekly reports, we have “only 100 harvests left”.

To keep up with global food demand, the UN estimates, 6m hectares (14.8m acres) of new farmland will be needed every year. Instead, 12m hectares a year are lost through soil degradation. We wreck it, then move on, trashing rainforests and other precious habitats as we go. Soil is an almost magical substance, a living system that transforms the materials it encounters, making them available to plants. That handful the Vedic master showed his disciples contains more micro-organisms than all the people who have ever lived on Earth. Yet we treat it like, well, dirt.

The techniques that were supposed to feed the world threaten us with starvation. A paper just published in the journal Anthropocene analyses the undisturbed sediments in an 11th-century French lake. It reveals that the intensification of farming over the past century has **increased the rate of soil erosion sixtyfold**.

Another paper, by researchers in the UK, shows that soil in allotments – the small patches in towns and cities that people cultivate by hand – contains a third more organic carbon than agricultural soil and 25% more nitrogen. This is one of the reasons why allotment holders produce between **four and 11 times more food per hectare** than do farmers.

Whenever I mention this issue, people ask: “But surely farmers have an interest in looking after their soil?” They do, and there are many excellent cultivators who seek to keep their soil on the land. There are also some terrible farmers, often absentees, who allow contractors to rip their fields to shreds for the sake of a quick profit. Even the good ones are hampered by an economic and political system that could scarcely be better designed to frustrate them.

This is the International Year of Soils, but you wouldn’t know it. In January, the Westminster government published a new set of soil standards, marginally better than those they replaced, but wholly unmatched to the scale of the problem. There are no penalities for compromising our survival except a partial withholding of public subsidies. Yet even this pathetic guidance is considered intolerable by the National Farmers’ Union, which greeted them with bitter complaints. Sometimes the NFU seems to me to exist to champion bad practice and block any possibility of positive change.

Few sights are as gruesome as the glee with which the NFU celebrated the death last year of the European soil framework directive, the only measure with the potential to arrest our soil-erosion crisis. The NFU, supported by successive British governments, fought for eight years to destroy it, then crowed like a shedful of cockerels when it won. Looking back on this episode, we will see it as a parable of our times.

Soon after that, the business minister, Matthew Hancock, announced that he was putting “business in charge of driving reform”: trade associations would be able “to review enforcement of regulation in their sectors.” The NFU was one the first two bodies granted this privilege. Hancock explained that this “is all part of our unambiguously pro-business agenda to increase the financial security of the British people.” But it doesn’t increase our security, financial or otherwise. It undermines it.

The government’s deregulation bill, which has now almost completed its passage through parliament, will force regulators – including those charged with protecting the fabric of the land – to “have regard to the desirability of promoting economic growth”. But short-term growth at the expense of public protection compromises long-term survival. This “unambiguously pro-business agenda” is deregulating us to death.

There’s no longer even an appetite for studying the problem. Just one university – Aberdeen – now offers a degree in soil science. All the rest have been closed down.

**This is what topples civilisations**. War and pestilence might kill large numbers of people, but in most cases the **population recovers**. But lose the soil and everything goes with it.

Now, **globalisation** ensures that this disaster is reproduced everywhere. In its early stages, globalisation enhances resilience: people are no longer dependent on the vagaries of local production. But as it proceeds, spreading the same destructive processes to all corners of the Earth, **it undermines resilience**, as it threatens to bring down systems everywhere.

Almost **all other issues are superficial by comparison**. What appear to be great crises are slight and evanescent when held up against the steady trickling away of our subsistence.

### 2NC --- Disease

#### Only degrowth can prevent future pandemics

**Degrowth 3/19**, (contributor, “A degrowth perspective on the coronavirus crisis” degrowth, 3-19-20, <https://www.degrowth.info/en/2020/03/a-degrowth-perspective-on-the-coronavirus-crisis/>) //AL

**The current crisis highlights the unsustainability of our current system**. If a flu can cause such upheaval throughout our entire social and economic system, then we should probably consider different and better ways to organize our societies. Our current political-economic system is incapable of responding to the crisis in a just and humane way. For example, the G7’s recent statement on the crisis portrays ‘the economy’ as an equal, if not greater, priority than social well-being: “we will work to resolve the health and economic risks caused by the COVID-19 pandemic and set the stage for a strong recovery of strong, sustainable economic growth and prosperity” Thus, an alternative political-economic system is needed. One that is more resilient, just, and explicitly prioritizes human (and non-human) well-being over economic growth. We will explore here some of the causes of covid-19, the structural mechanisms that have exacerbated it, and consider how this would be different in a degrowth society. **Covid-19 originated from a ‘live-animal market’**, where over 100 types of wild and domesticated animals are kept in close proximity and killed in front of customers. Like many pandemics before it, covid-19 entered the human population through the killing and consumption of animals. Initially then**, a society in which animals were treated with more care rather than as commodities** to be exploited and consumed **would reduce the risk of pandemics** such as covid-19. On this note, some degrowth advocates have argued for animal liberation. A strong case can be made that it is **the global capitalist industrial agri-food system** in particular that **creates** the kind of **conditions** that allow **for the increased occurrence of viruses and their potential to spread**. The occurrence (and spread) of viruses like covid-19 is also greatly exacerbated by highly dense living. Cities have been growing in size and numbers since the agrarian revolution and continue unchecked up until the present. Larger and **denser cities are a consequence of out-migration** from the declining countryside **due to a lack of employment opportunities,** economic and transport policies that favor the center over the periphery, **and a culture that fetishizes the lifestyle and opportunities of the big city**. Meanwhile, a degrowth transformation would emphasize the importance of community-based economic activity, re-prioritize essential work such as growing food, re-value proximity to nature, and demonstrate the possibilities for a multi-cultural, diverse, and socially-rich life outside of big cities.

#### Globalization and trade increase the risk of fast-spreading epidemics – and vaccines can’t solve

**Daszak et al ‘17**, - President of EcoHealth Alliance, one of the founders of the field of Conservation Medicine, member of the National Academy of Medicine and Chair of the NASEM’s Forum on Microbial Threats, the NRC Advisory Committee to the US Global Change Research Program, the Supervisory Board of the One Health Platform, the One Health Commission Council of Advisors, the CEEZAD External Advisory Board, the Cosmos Club, and the Advisory Council of the Bridge Collaborative. He served on the IOM Committee on global surveillance for emerging zoonoses, the NRC committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity CRC; and has advised the Director for Medical Preparedness Policy on the White House National Security Staff on global health issues. He’s authored over 300 scientific papers and was listed as a Web of Science Highly Cited Researcher in 2018 due to his contributions to identifying the bat origin of SARS, the drivers of Nipah virus emergence, publishing the first global emerging disease ‘hotspots’ map, discovering SADS coronavirus, designing a strategy to identify the number of unknown viruses in wildlife, launching the Global Virome Project, identifying the first case of a species extinction due to disease, and discovering the disease chytridiomycosis as the cause global amphibian declines (Peter Daszak, Tong Wu, Charles Perrings, Ann Kinzig, James P. Collins, Ben A. Minteer, "Economic growth, urbanization, globalization, and the risks of emerging infectious diseases in China: A review” Ambio, February 2017, Volume 46, Issue 1, pp 18–29) //AL

Today, an increasingly urban and interconnected world faces growing threats from emerging infectious diseases (McMichael 2004; Kapan et al. 2006; Bradley and Altizer 2007). This is of particular concern in the developing world, where managing fast-spreading epidemics in the growing number of megacities is a pressing challenge (Rees 2013). Recent epidemics have underscored the importance of linkages between host habitats and the global network of cities. The Ebola virus, for example, has long survived among wildlife reservoirs in the hinterlands of Africa, ‘‘breaking out’’ in towns and cities in conspicuous but otherwise local epidemics. As in earlier outbreaks, the 2014 epidemic is thought to have origins in the consumption of wild animal protein, while its spread occurred in densely populated African cities. The international threat it posed stemmed from the increasing air travel connections between these and other cities around the world.  In the case of arboviruses like Zika, dengue, chikungunya, West Nile, and malaria, whose vectors have found ready habitat in urban areas, the primary mechanism for the spread of disease from one city to the next is international trade and travel (Hay et al. 2005; Tatem et al. 2006; Alirol et al. 2011; Weaver 2013; Kraemer et al. 2015). The same is true of coronaviruses such as Severe Acute Respiratory Syndrome (SARS) and Middle Eastern Respiratory Syndrome (MERS). The latter emerged in Saudi Arabia in 2012, having been transmitted between animal reservoirs such as camels and their human handlers. It has since spread throughout the surrounding region, and travel-related human infections have been recorded in Europe, North America, and East and Southeast Asia (Parlak 2015; Zumla et al. 2015). **Urbanization and globalization have made outbreaks of these diverse zoonoses difficult to control, even with unprecedented levels of international cooperation** (Khan et al. 2013; Weaver 2013; Chan 2014; Kraemer et al. 2015). For most emerging infectious diseases, **prevention is better than** **cure**—ex ante **mitigation of disease risk is more economically efficient than ex post adaptation to an outbreak (**Murphy 1999; Graham et al. 2008; Voyles et al. 2014; Langwig et al. 2015). Among mitigation strategies, vaccination has been a widespread and long-established practice for many DNA viruses such as chicken pox or small pox. However, vaccination remains problematic for most RNA viruses, including Ebola, SARS, and avian influenza, due to their higher mutation rate; vaccination is simply not a feasible way to prevent the emergence of many novel zoonoses, which will inevitably encounter immunologically naı¨ve populations. Therefore, mitigating the risks from emerging and reemerging zoonoses requires preemptive measures against their socioecological drivers (Pike et al. 2014). Identifying areas where the convergence of risk factors is occurring with greatest intensity, and at the largest scales, is a logical first step in the development of a mitigation strategy. In this regard, China may be an important outlier among countries.Assessment of the risks posed by zoonotic diseases requires an understanding of how socioeconomic, and ecological conditions affect two phenomena: emergence (the irruption of a pathogen originating in wildlife or livestock into human populations) and spread (the transmission of disease among both animals and people). In this article, we review the evidence for changes in zoonotic risks in China. More particularly, we show how income growth, urbanization, and globalization affect the likelihood of emergence and spread, using SARS and avian influenza as topical and representative examples, but also referring to other diseases when relevant. We discuss the policy implications of changes in the epidemiological environment in China, and consider how the mitigation of zoonotic risk in China could benefit the global risk environment.

#### Urbanization makes the evolution of super-spreaders uniquely likely

**Daszak et al ‘17**, - President of EcoHealth Alliance, one of the founders of the field of Conservation Medicine, member of the National Academy of Medicine and Chair of the NASEM’s Forum on Microbial Threats, the NRC Advisory Committee to the US Global Change Research Program, the Supervisory Board of the One Health Platform, the One Health Commission Council of Advisors, the CEEZAD External Advisory Board, the Cosmos Club, and the Advisory Council of the Bridge Collaborative. He served on the IOM Committee on global surveillance for emerging zoonoses, the NRC committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity CRC; and has advised the Director for Medical Preparedness Policy on the White House National Security Staff on global health issues. He’s authored over 300 scientific papers and was listed as a Web of Science Highly Cited Researcher in 2018 due to his contributions to identifying the bat origin of SARS, the drivers of Nipah virus emergence, publishing the first global emerging disease ‘hotspots’ map, discovering SADS coronavirus, designing a strategy to identify the number of unknown viruses in wildlife, launching the Global Virome Project, identifying the first case of a species extinction due to disease, and discovering the disease chytridiomycosis as the cause global amphibian declines (Peter Daszak, Tong Wu, Charles Perrings, Ann Kinzig, James P. Collins, Ben A. Minteer, "Economic growth, urbanization, globalization, and the risks of emerging infectious diseases in China: A review” Ambio, February 2017, Volume 46, Issue 1, pp 18–29) //AL

The epidemiological implications of disease comorbidity— including the risks of ‘‘super-spreaders’’—are perhaps even more significant at the international level. For instance, had the first SARS carrier reached the dense precincts of Durban, with its high incidence of AIDS, rather than the more ordered and hygienic environment of Toronto, the outcome may have been much worse (Weiss and McMichael 2004). Of course, the probability that an infection is transmitted abroad to a given city depends on the volume of trade and travel involved, but since trade between China and South Africa has been growing more rapidly than trade with China’s main international markets, this is not a trivial observation. China is now the world’s largest trading nation, and in recent years its trade to nearly every region of the world has increased significantly (Fig. 4). The global infectious disease risks created by China’s trade growth stem from the fact that **international markets facilitate the movement of pathogens around the world as freely as commodities and people** (Perrings et al. 2005; Knobler et al. 2006; Tatem et al. 2006; Hulme 2009; Perrings 2010; Kilpatrick 2011).  In history, there have been several notable moments when trade and travel have bridged the natural epidemiological discontinuities created by geography. The most famous of these is the Black Death of the thirteenth and fourteenth centuries, during which the plague bacillus Yersinia pestis spread from China to Europe along trade routes maintained by the Mongol Empire. The same disease had also earlier spread across Eurasia from China in the sixth century (Wagner et al. 2014). That outbreak, known as the Plague of Justinian, had killed tens of millions across the Mediterranean region and critically damaged the economic and geopolitical fortunes of the Byzantine Empire (McNeill 1998). Not all epidemics have Chinese origins, though. Several centuries later, overseas expansion by European powers led not only to the political and economic subjugation of foreign peoples, but also to the introduction of many new species—pests and pathogens among them (Crosby 1986). The growth of maritime trade facilitated massive movements of people, plants, and animals, as well as the pathogens that these passengers and cargo carried, across the world’s oceans. The so-called Columbian Exchange had particularly severe effects on human health on both sides of the Atlantic. Old World diseases such as smallpox, typhoid, typhus, and measles were introduced to the Western Hemisphere by colonizers, resulting in significant depopulation and a decisive shift in the balance of power (McNeill 1998; Diamond 1999; Crosby 2003).  Nevertheless, China has remained a persistent and important source of infectious zoonotic disease. For instance, a plague outbreak in southwestern China engulfed the country and then spread to the rest of the world in the late 1800s. The spillover was likely mediated by rat-borne fleas, brought into contact with people due to ecological encroachments from settlement expansion (Benedict 1996). This plague first spread to the port cities of the Chinese coast and thence to Southeast Asia, the United States, and Europe. In the western U.S., the bacillus remained epizootic among rodent species well into the twentieth century (McNeill 1998).  The archetypal modern pandemic—the one that remains a touchstone for thinking about global infectious disease risk—is the 1918–1919 Spanish Flu. The severity of this pandemic was in large part a result of the integration forced by global conflict. Propagated by the movements of millions of servicemen during and after World War I, this strain of H1N1 influenza may have infected as many as 500 million people, or a quarter of the world’s population, and killed as many as 50–100 million (Taubenberger and Morens 2006). Recent forensic studies tracking mortality rates and other contemporary evidence suggest that, contrary to its name, this pandemic actually originated in China (Langford 2005; Humphries 2014). Indeed, China has been the epicenter of influenza both before and after the ‘‘Spanish Flu.’’ At least two of four historically documented pandemics originated in China before 1918, as did both of the subsequent pandemics (Potter 2001) (Fig. 5).  The **mechanism behind the global spread of diseases after 1918 has been the ever-closer integration of the world economy.** Habitat suitability and transport distance determine the potential dispersal patterns of infectious disease vectors (Tatem et al. 2006), while the relative costs and benefits of trade and infectious disease determine the likelihood that pathogens will be spread this way (Perrings 2014). The potentially high cost of the SARS epidemic led to prompt preventive action, but the volume of travel meant that the pathogen still managed to reach every continent. In East Asia alone, SARS resulted in at least a 2 % decline of GDP (Brahmbhatt 2005). It has been estimated that the economic losses from a major influenza pandemic could be as high as $7.3 trillion (12.6 % of global GDP)—a downturn on par with the Great Depression—and cause over 140 million deaths (McKibbin and Sidorenko 2006).

#### COVID mutations put all of humanity at risk

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The Godzilla-like image of the virus Covid-19 has been haunting the world. Not only has the virus unraveled nightmarish possibilities leading to the extinction of millions of people, but it has also served as a quintessential case revealing the structural contradictions of and existential threats posed by capitalism on a global scale. Several researchers agree that Covid-19 is quite an unprecedented virus. Unlike seasonal influenza, Covid-19 is ten times deadlier, and we have yet to develop a medical remedy or herd immunity to slow it down; the best estimates for the development of a vaccine are at least three to six months away. The virus’s mortality rate seems much lower than earlier pandemics (such as Ebola [1994], Avian flu [1997], SARS [2002], MERS [2012]); yet the manner in which Covid-19 spreads, i.e., its mode of infectivity, seems radically different. Unlike earlier pandemics, the virus has proved infectious even before carriers display any symptoms, which renders it often undetectable during the 14-day incubation period. Facts on the Ground Given that we are unable to detect or cure it, we are completely helpless against the virus’s global march. Emergency measures such as compulsory quarantines, social-distancing and improved hygiene standards may temporarily slow down the virus’s pace, yet once these measures begin to be relaxed – as they surely will be – it is very likely that the virus will be at our door again. This grim picture gets even more complicated by the fact that the virus is likely to go through several mutations. The virus may increase its adaptability to new climatic and generational circumstances, hence targeting not only the elderly, but a broader age group even when summer arrives in the northern hemisphere. Covid-19 is not the first ‘modern’ pathogen with global consequences. The Spanish Flu (1918), for example, was sweeping in terms of its geographical span as well as devastating in terms of its death toll. As Mike Davis notes, the Spanish flu broke out at a time when billions were still in the process of being (forcibly) incorporated into the capitalist world market. The expansion of markets eliminated the very basis of safety-first agriculture, undermining local reciprocities and solidarities that traditionally provided welfare to the poor during crises. Indeed, what prepared the ground for its outbreak and exacerbated the impact of this early 20th century pathogen was the deterioration of nutritional standards under market imperatives as well as the exigencies and scarcities caused by the Great War. Covid-19, by contrast, has begun its journey and taken its biggest toll thus far in the most advanced and affluent parts of the world. This is to say, the contagion is no longer limited to the persistently undernourished, underdeveloped, and war-torn parts of the world; its impact is no longer restricted to a distant wet market or a third world country alone. Instead, it has emerged and expanded in the very heart of the capitalist world order at a time when capitalism has not only been already firmly established across the globe but has been testing the eco-biological limits of the entire planet. Should things remain the same, Covid-19 and its future cousins are likely to claim the lives of not just ‘some’ people as they did in the past, but of humanity as a whole. In this sense, perhaps for the first time in modern history, the biological blitzkrieg activated by the coronavirus has thrown into sharp relief the immediately existential and undeniably global contradictions and consequences generated by capitalism.

#### Diseases cause extinction – bioweapons and microbe evolution

**Millett and Snyder-Beattie ‘17** - \*Millett is Senior Research Fellow at the Future of Humanity Institute. He consults for the World Health Organization on research and development for public health emergencies. He spent more than a decade working for the Biological Weapons Convention, He co-founded a successful consultancy firm that works with government, industry and academia to ensure the safe, secure and sustainable exploitation of biology as a manufacturing technology. (Piers and Andrew, “Existential Risk and Cost-Effective Biosecurity,” 8/1/17, Health Security, Vol. 15, No. 4) //SD

In the decades to come, advanced bioweapons could threaten human existence. Although the probability of human extinction from bioweapons may be low, the expected value of reducing the risk could still be large, since such risks jeopardize the existence of all future generations. We provide an overview of biotechnological extinction risk, make some rough initial estimates for how severe the risks might be, and compare the cost-effectiveness of reducing these extinction-level risks with existing biosecurity work. We find that reducing human extinction risk can be more cost-effective than reducing smaller-scale risks, even when using conservative estimates. This suggests that the risks are not low enough to ignore and that more ought to be done to prevent the worst-case scenarios. The authors provide an overview of biotechnological extinction risk, make some rough initial estimates for how severe the risks might be, and compare the cost-effectiveness of reducing these extinction-level risks with existing biosecurity work. They find that reducing human extinction risk can be more cost-effective than reducing smaller-scale risks, even when using conservative estimates suggesting that the risks are not low enough to ignore and that more ought to be done to prevent the worst-case scenarios.How worthwhile is it spending resources to study and mitigate the chance of human extinction from biological risks? The risks of such a catastrophe are presumably low, so a skeptic might argue that addressing such risks would be a waste of scarce resources. In this article, we investigate this position using a cost-effectiveness approach and ultimately conclude that the expected value of reducing these risks is large, especially since such risks jeopardize the existence of all future human lives.Historically, disease events have been responsible for the greatest death tolls on humanity. The 1918 flu was responsible for more than 50 million deaths,1 while smallpox killed perhaps 10 times that many in the 20th century alone.2 The Black Death was responsible for killing over 25% of the European population,3 while other pandemics, such as the plague of Justinian, are thought to have killed 25 million in the 6th century—constituting over 10% of the world's population at the time.4 It is an open question whether a future pandemic could result in outright human extinction or the irreversible collapse of civilization. A skeptic would have many good reasons to think that existential risk from disease is unlikely. Such a disease would need to spread worldwide to remote populations, overcome rare genetic resistances, and evade detection, cures, and countermeasures. Even evolution itself may work in humanity's favor: Virulence and transmission is often a trade-off, and so evolutionary pressures could push against maximally lethal wild-type pathogens.5,6While these arguments point to a very small risk of human extinction, they do not rule the possibility out entirely. Although rare, there are recorded instances of species going extinct due to disease—primarily in amphibians, but also in 1 mammalian species of rat on Christmas Island.7,8 There are also historical examples of large human populations being almost entirely wiped out by disease, especially when multiple diseases were simultaneously introduced into a population without immunity. The most striking examples of total population collapse include native American tribes exposed to European diseases, such as the Massachusett (86% loss of population), Quiripi-Unquachog (95% loss of population), and the Western Abenaki (which suffered a staggering 98% loss of population).9In the modern context, no single disease currently exists that combines the worst-case levels of transmissibility, lethality, resistance to countermeasures, and global reach. But many diseases are proof of principle that each worst-case attribute can be realized independently. For example, some diseases exhibit nearly a 100% case fatality ratio in the absence of treatment, such as rabies or septicemic plague. Other diseases have a track record of spreading to virtually every human community worldwide, such as the 1918 flu,10 and seroprevalence studies indicate that other pathogens, such as chickenpox and HSV-1, can successfully reach over 95% of a population.11,12 Under optimal virulence theory, natural evolution would be an unlikely source for pathogens with the highest possible levels of transmissibility, virulence, and global reach. But advances in biotechnology might allow the creation of diseases that combine such traits. Recent controversy has already emerged over a number of scientific experiments that resulted in viruses with enhanced transmissibility, lethality, and/or the ability to overcome therapeutics.13-17 Other experiments demonstrated that mousepox could be modified to have a 100% case fatality rate and render a vaccine ineffective.18 In addition to transmissibility and lethality, studies have shown that other disease traits, such as incubation time, environmental survival, and available vectors, could be modified as well.19-21Although these experiments had scientific merit and were not conducted with malicious intent, their implications are still worrying. This is especially true given that there is also a long historical track record of state-run bioweapon research applying cutting-edge science and technology to design agents not previously seen in nature. The Soviet bioweapons program developed agents with traits such as enhanced virulence, resistance to therapies, greater environmental resilience, increased difficulty to diagnose or treat, and which caused unexpected disease presentations and outcomes.22 Delivery capabilities have also been subject to the cutting edge of technical development, with Canadian, US, and UK bioweapon efforts playing a critical role in developing the discipline of aerobiology.23,24 While there is no evidence of state-run bioweapons programs directly attempting to develop or deploy bioweapons that would pose an existential risk, the logic of deterrence and mutually assured destruction could create such incentives in more unstable political environments or following a breakdown of the Biological Weapons Convention.25 The possibility of a war between great powers could also increase the pressure to use such weapons—during the World Wars, bioweapons were used across multiple continents, with Germany targeting animals in WWI,26 and Japan using plague to cause an epidemic in China during WWII.27Non-state actors may also pose a risk, especially those with explicitly omnicidal aims. While rare, there are examples. The Aum Shinrikyo cult in Japan sought biological weapons for the express purpose of causing extinction.28 Environmental groups, such as the Gaia Liberation Front, have argued that “we can ensure Gaia's survival only through the extinction of the Humans as a species … we now have the specific technology for doing the job … several different [genetically engineered] viruses could be released”(quoted in ref. 29). Groups such as R.I.S.E. also sought to protect nature by destroying most of humanity with bioweapons.30 Fortunately, to date, non-state actors have lacked the capabilities needed to pose a catastrophic bioweapons threat, but this could change in future decades as biotechnology becomes more accessible and the pool of experienced users grows.31,32What is the appropriate response to these speculative extinction threats? A balanced biosecurity portfolio might include investments that reduce a mix of proven and speculative risks, but striking this balance is still difficult given the massive uncertainties around the low-probability, high-consequence risks. In this article, we examine the traditional spectrum of biosecurity risks (ie, biocrimes, bioterrorism, and biowarfare) to categorize biothreats by likelihood and impact, expanding the historical analysis to consider even lower-probability, higher-consequence events (catastrophic risks and existential risks). In order to produce reasoned estimates of the likelihood of different categories of biothreats, we bring together relevant data and theory and produce some first-guess estimates of the likelihood of different categories of biothreat, and we use these initial estimates to compare the cost-effectiveness of reducing existential risks with more traditional biosecurity measures. We emphasize that these models are highly uncertain, and their utility lies more in enabling order-of-magnitude comparisons rather than as a precise measure of the true risk. However, even with the most conservative models, we find that reduction of low-probability, high-consequence risks can be more cost-effective, as measured by quality-adjusted life year per dollar, especially when we account for the lives of future generations. This suggests that despite the low probability of such events, society still ought to invest more in preventing the most extreme possible biosecurity catastrophes.

### 2NC --- Antibacterial Resistance

#### Growth causes ABR AND turns their impact.

**Malik and Bhattacharyya 19** (Bhawna, PhD Scholar in Department of Mathematics and School of Natural Sciences researching ABR in the disease modeling lab, MSC Applied Mathematics from South Asian University; Samit, Associate Professor at Department of Mathematics at School of Natural Sciences, works in the same lab as Malik, PhD Mathematical Biology from University of Calcutta; “Antibiotic drug-resistance as a complex system driven by socio-economic growth and antibiotic misuse,” 06-05-2019, Scientific Reports, https://doi.org/10.1038/s41598-019-46078-y)//ddv

Introduction

The rapid emergence and dissemination of resistant bacteria is occurring globally, threatening the potency of antibiotics, which saves millions of lives1,2. It is described as the **primary threat to public health** in the 21st century, and agencies around the globe have underlined the urgent need for actions3,4. There is high resistance to Cotrimoxazole (68.5%) and Ampicillin (84.5%) among the Gram-negative bacilli in Zimbabwe5. In the same country, Gram-positive cocci is also resistant to Cotrimoxazole (69%) and Nalidixic acid (81%). E. coli is another pathogen that shows 84% resistance to ampicillin6. A recent report has documented the non-susceptibility pattern of key Gram-negative (such as Klesbsiella, E. coli, Salmonella, Shigella) and Gram-positive pathogens (such as S. pneumoniae, S. aureus, S. agalactae, MRSA) to the most common antibiotics in Sub-Saharan Africa7. However, antibiotic resistance is worldwide, and the effects of resistance are more severe in lower- and upper middle-income countries (Fig. S1)8,9. This ever-growing problem not only threatens public health, but also **incurs a huge toll on nation’s economic growth** by delayed hospitalizations, lengthening recovery time, expensive medicines, and specialized care for patients10,11,12. Shrestha et al. (2018) have estimated the economic cost of resistance per antibiotic by drug class and compared those in developing and developed countries, like in Thailand and United States11. Moreover, mortality and morbidity are the indirect consequences of resistance that incur a huge loss in income leading the sufferer and family to the poor economic condition13.

Antibiotic resistance may occur naturally, but irrational use of antibiotics accelerate the process leading to expulsion of sensitive strain, and procreation and propagation of the resistant bacteria in the community11,14,15. Several countries already have taken steps to reduce the misuse of antimicrobials. World Health Organization (WHO) already has launched a Global Action Plan in 2015 to initiate evidence based prescribing through effective, rapid, and low-cost diagnostic tools to optimize use of antimicrobials16. In spite of these efforts, the volume of antibiotic use is ever-increasing worldwide, especially in developing countries. A recent report indicates that the global antibiotic consumption increased by 65% (rate increased by 39%) between 2000 and 2015, from 21.1 to 34.8 billion Daily Defined Doses (DDDs), and the global increase was primarily driven by increased consumption in Lower Middle Income Countries (Fig. S2)9. Countries like Brazil, Russia, India, China, and South Africa (BRICS countries) are developing nations, which show the highest drug consumption from 2000 to 2010 with India as the first and China is in the second position17.

Self-medication plays a **major role** in ever-increasing antibiotic consumption18,19,20,21. Over-the-counter (OTC) sales – which is more ubiquitous in more economically destitute society – is one of the source of self-medication22. It is a very common practice in countries like Bangladesh23, Addis Ababa and Central Ethiopia24, and North West Ethiopia25. Avoiding expenditure of treatment, inability to access medical facilities, less education and lack of awareness are utmost challenges for self-medication26. Also, perceived patient expectation, lack of knowledge and diagnostics, incentives and advertising from industry, and financial benefits are major factors for irrational antibiotic prescription by physicians in most of the developing countries27.

The relation between antimicrobial use and emergence of resistance is a complex association. While most of the recent research focus on understanding microbiology of drug-resistance, there are only few modelling studies that emphasize transmission dynamics and coexistence of strains under volume of antibiotic use. For example, Massad et al. (1993) studied coexistence of sensitive and resistant strains in hospital infection28. Austin et al. (1999, 2001) developed model to understand influence of drug use on transmission of resistance29. In the past few years, various antibiotic drug-resistance models have been developed that discuss usage of antibiotics and emergence of resistance30,31,32,33,34. For example, Levin et al. (2014) have shown by developing simple epidemiological model that burden of resistance can be maintained under certain acceptable level if the use of specific antibiotics declines with the frequency of resistance to these drugs35. Developing game theoretic model, Fu and Chen (2018) have shown how social learning may help prescribing behavior of physicians to promote social optimum of antibiotic consumption36. However, there is rarely any modelling work that integrate socio-economic growth, antibiotic use and transmission dynamics to understand this ever-increasing antibiotic consumptions in middle and lower income countries.

In this paper, we present a mechanistic model of community-acquired drug-resistance, combining population ecology of infectious disease, **economic growth** and antibiotic use as a function of individual economic status. Every country has its own economic constraints and epidemiological parameters behind the emergence and prevalence of drug resistance in its population. Also, different pathogens have different mechanisms of emergence and transmission. Instead of incorporating specific characteristics of a diverse variety of pathogens, we test our theory using general susceptible-infected-susceptible (SIS) model, where individuals can have recurrent infections over the course of their lifetime. This kind of general framework of reinfection is considered to represent the repeated threat of infection that individuals face in most of developing tropical countries. However, our model can demonstrate the emergence of antibiotic drug-resistance in the population as a **self-reinforcing** system where these three components interact through **positive feedbacks** on each other (Fig. 1). It can explain the ever-increasing development of resistance, especially in lower-income countries. We interpret how invasion and dominance of resistance are correlated with **socio-economic growth** and antibiotic consumption in the population. Our model analyses reveal that a large inflow of capital in the form of development aid, especially in the early stage, can escape the situation by encouraging economic growth and scaling down the antibiotic misuse.

#### ABR causes extinction.

**Meer et al. 16** (Jos, emeritus professor and former chairman at the department of internal medicine of the Radboud University Nijmegen Medical Centre; “Can we Tackle the Antibiotic Threat?” 2016, European Review, European Academies Science Advisory Council, Vol. 24, doi:10.1017/S1062798715000435)//ddv

In recent years, microorganisms, especially bacteria, resistant to many antibiotics have been causing infections that are difficult to treat. It is estimated that, in Europe, some 25,000 people die of severe bloodstream infection (sepsis) caused by resistant bacteria every year. The increase in the prevalence of these resistant bacteria has been accompanied by stagnant development of new antibiotics. Bacterial infections that are no longer treatable with antibiotics are already quite prevalent in countries such as India and Greece, and there is a real threat that such infections will increasingly occur elsewhere. Many have voiced their concerns about this global problem. For instance, the Chief Medical Officer in the United Kingdom, Dame Sally Davies, FRS, has described the rising risk of antibiotic resistance as a bigger threat than **global warming** and has warned that the population could be facing an ‘**apocalyptic scenario’**. In a collaborative paper in the Lancet by Dr Jean Carlet et al., it was phrased as follows: ‘We have watched too passively as the treasury of drugs [antibiotics] that has served us well has been stripped of its value. We urge our colleagues worldwide to take responsibility for the protection of this precious resource. There is no longer time for silence and complacency’. 1 In this paper we describe this problem in greater detail and discuss the steps that have been proposed by the European Academies Science Advisory Council, EASAC.2

Historical Background

Early in the 20th century, Paul Ehrlich aspired to develop a ‘therapia magna sterilisans’, and his discovery the arsenic compounds Salvarsan and Neosalvarsan for treatment of syphilis meant the start of the era of antimicrobial treatment. Shortly before the Second World War, the prognosis of patients with lifethreatening bacterial infections such as pneumococcal pneumonia and bacterial meningitis changed, because sulphonamides became available as antibacterial drugs. The sulphonamides were not effective against many other bacterial infections and were not free of serious side effects, but nevertheless they were a major step forward. The sulphonamides as antibacterial drugs were discovered by Gerhard Domagk, at IG Farbenindustrie in Germany. He was searching whether chemical dyes were useful as antibacterial drugs, based on the notion that these substances stained bacteria as well as tissues. In fact, it was not the dye part of the molecule but the sulphonamide part attached to it that appeared to be the active component.3

If Domagk had not done his primary experiments in vivo in mice, he would not have discovered the antimicrobial action of Prontosil. This was because Prontosil is a pro-drug, which only after being metabolised in vivo would become an active antibacterial drug.4 For that reason, Jacob and Heidelberger in 1915 missed the antibacterial effect action of the sulphonamides.5

In the late 1920s, Alexander Fleming had already made his serendipitous discovery of penicillin,6 a product of the mould Penicillium. This discovery did not lead to extensive use of the substance for treatment, with the exception of the local treatment of bacterial conjunctivitis.7 Rubin, in his description of the early years of antibiotics, gives a number of explanations as to why Fleming did not translate his finding to clinical use.8

Fleming was intrigued by his observation because of his interest in lysis of bacteria and because staphylococci were known to be notoriously resistant to lysis. Even if he had the desire to provoke interest in penicillin, his superior, Almroth Wright, was strongly against the idea of any therapeutic value of penicillin and expressed his disfavour to Fleming.

It still took Florey and Chain great efforts during the Second World War to develop penicillin (benzylpenicillin, penicillin G) further as a potent antibiotic that really changed the prognosis of patients with serious bacterial infections.9

After this relatively slow start, the development of benzylpenicillin was followed by a rapid and enormous development of very effective antibiotics in the decades after the war. Most of the antibiotics that came to the market were based on natural substances, products made by fungi and bacteria in the soil.10 Chemical modification of these compounds led to drugs with improved pharmacological properties (such as resorption after oral administration). Since the antibacterial effect of the penicillins is due to their interference with the synthesis of the bacterial cell wall, they were remarkably free of toxicity for the mammalian cell, which lacks a cell wall (the mammalian cell only has a cell membranes to contain its cytoplasm). This so-called selective toxicity and the impressive antibacterial potency of the effect of the penicillins largely explain their success.

When the sulphonamides and penicillins came into clinical use, it was immediately apparent that not all bacterial infections responded. This was found to be due to natural resistance to the drug(s). Soon, however a more serious problem emerged: use of these drugs led to the appearance of more resistant bacteria; even bacteria that had been susceptible originally were seen to acquire resistance.

Antimicrobial Resistance

Regarding the action of antibiotics, we distinguish between those compounds that kill bacteria at concentrations that can be attained in the human body, the bactericidal drugs, and those that only inhibit the proliferation of bacteria, the bacteriostatic drugs. The penicillins are typical examples of bactericidal drugs.

When a microorganism is not killed or not inhibited in its proliferation by an antibiotic at concentrations that can be reached in the human body, the microorganism is **not susceptible** to the drug and we speak of antimicrobial resistance. Antimicrobial resistance is based on at least one of the following mechanisms.

(1) The antibiotic cannot reach the target where it exerts its potential action. This may be due to a barrier, such as a cell wall that cannot be passed.

(2) The antibiotic is inactivated, for instance while it is broken down by an enzyme (such as a β-lactamase, the enzymes capable of hydrolysing the β-lactam ring structure of the penicillins)

(3) The target is insensitive to the antibiotic, for instance because the antibiotic is not able to bind to it.

(4) The antibiotic is pumped out of the bacterial cell before it can reach the target.

Some of these mechanisms may represent intrinsic properties of the bacterium, but they may also develop during exposure to antibiotics.

The vast potential of bacteria to proliferate with generation times of less than an hour for many species, allows them to undergo **rapid evolution**. Random mutations in the bacterial DNA may dramatically change their ability to survive in the presence of an antibiotic. The chance that this occurs is greatest when the ambient antibiotic concentrations are low. Often more than one mutation is necessary to create full resistance. Bacteria are not only able to adapt to the antibiotic pressure in this way, they also possess mechanisms of horizontal **gene transfer**, most often between members of the same strain, but sometimes also between different bacterial species. A detailed discussion of these mechanisms is beyond the scope of this article.

The Race between Resistance and Antibiotic Development

The first microorganism that posed a resistance problem was Staphylococcus aureus, a skin bacterium that causes wound infections (e.g. after surgery) and other serious suppurative infections. Some S. aureus strains were able to produce penicillinase, the prototypic β-lactamase able to hydrolyse penicillin and make it inactive.11

The response of both academia and industry was to search for other antibiotic compounds in soil, and soon a series of antibiotics were found (see Figure 1, upper part). It also appeared possible to chemically modify the penicillin molecule to make it resistant to the penicillinase of S. aureus.

In the years that followed, new resistant microorganisms emerged, especially within the Gram-negative12 microflora. Most Gram-negative bacteria were not very susceptible to the penicillins, but they were to some of the antibiotics that were discovered in the early days (like streptomycin, chloramphenicol and tetracyclines).

From Figure 1, it can be discerned that antibiotic discovery and development kept a rather close pace with the emergence of resistance between 1945 and the mid-1980s. In those days a series of pharmaceutical companies (Beecham Research Laboratories, Eli Lilly, Lederle, Bristol Meyers, Mycopharm, Lepetit, to name a few) **flourished** and regularly **produced new antibiotics**. There was a kind of naive trust that industry could outsmart the microbes.

[FIGURE 1 OMITTED]

Losing the Race

The simplest answer to the question how the global antimicrobial resistance crisis emerged is: by overuse and misuse of antibiotics.13 Antibiotics exert selection pressure, which means that they will kill the microorganisms that are susceptible and thereby promote **overgrowth of resistant ones.**

Irrespective of the molecular mechanisms by which antibiotic resistance arises, the major determinant of antimicrobial resistance is the amounts of antibiotic to which the microbes are exposed in a system. In other words, the more antibiotics that are used, e.g. in a hospital, the larger the number of resistant microorganisms that will appear.

Antibiotics are overused and misused because they are – as Dr Calvin Kunin coined them – ‘drugs of fear’. 14 For this reason, many physicians still use antibiotics for viral and self-limiting infections, to err on the safe side. There are important social, cultural and behavioural aspects involved in antimicrobial prescribing. An overview can be found in Hulscher et al. 15

Over-the-counter availability of antibiotics is most probably a major contributor to the emergence of resistant microorganisms in many parts of the world. So far, this problem has been handled poorly.

Since the end of the Cold War, there has been a steep rise in antimicrobial resistance in the eastern European countries that had been long devoid of sophisticated antibiotics. It is suspected that massive and indiscriminate use of modern antibiotics in these countries led to the induction of antimicrobial resistance. Overuse and misuse of antibiotics not only occurs in human medicine, but also in veterinary medicine and in agriculture. Large-scale use of antibiotics for ‘growth promotion’ of livestock, a practice not supported by good science, was common in many countries until some 10 years ago.16 Other questionable practices, such as preventive treatment of fertilised eggs with quinolones, have contributed to infections with resistant microorganisms in humans.17 Even in plant breeding, antimicrobial drugs are applied that have led to antimicrobial resistance. The widespread use in plant breeding of the azole class of antifungal drugs are the source of azole-resistant Aspergillus fumigates, a fungus that causes life-threatening infections in patients with severely impaired host defence mechanisms.18

A second reason for the crisis has to do with the stagnant development of new antibiotics. In the 1980s gradually the innovative power seemed to wane, leading to a ‘discovery void’ after 1985. A number of explanations can be given.

(1) Most antibiotics that were developed in those days were modifications of existing antibiotics that belonged to a rather limited number of classes (penicillins, cephalosporins, aminoglycosides). New natural sources were not found (but neither intensively searched for).

(2) Too much effort was put in later years in antibiotics with a single target, and this has led to rapid development of resistance and failure of the compound.19

(3) The genomic era had started, and the vision was that if the human genome and the genomes of the major pathogenic bacteria would be known, major new selective drug targets would be found just by comparing these genomes. Major investments were done to embark on this genomic approach. Tragically, no new drugs emerged in this way.

[TABLE 1 OMITTED]

(4) Over the past 40 years the duration of average antibiotic treatment has diminished remarkably. While in the 1950s and 1960s, it was customary to treat even simple infections for 2 weeks, the duration of treatment for many infections became shorter and shorter during the decades that followed: from 10 days to 7 days to 5 days and occasionally 3 days now. This means that the revenues from such treatments also diminished and strongly contrasts with chronic treatments for hypertension, elevated cholesterol, cardiac failure, diabetes and also for infection caused by human immunodeficiency virus (HIV). The low returns on investment of antibiotic drug development have caused many pharmaceutical companies to abandon this field.

(5) Another reason, which is difficult to prove, might be the mergers of pharmaceutical industries that have occurred. This may have led to less innovative power.

Multi-resistant Microorganisms

Over the past decades, the number of microorganisms that are resistant to multiple antibiotics has **risen considerably**. A list of these microorganisms is given in Table 1. The most threatening are those bacteria that **cannot be treated anymore with any drug**. A major example is those Gram-negative bacteria that carry the gene that encodes for NDM-1 (New Delhi Metallo-β-lactamase-1). Infections caused by these bacteria, which originate from India, are largely **untreata**

#### Antibiotics reaching ecological limits – finite AND collapse inevitable.

**Jørgensen et al. 18** (Peter Søgaard, Deputy Executive Director at The Royal Swedish Academy of Sciences, leads research theme on global health and biosphere stewardship at GEDB, coordinates AMResilience project, PhD; “Antibiotic and pesticide susceptibility and the Anthropocene operating space,” 11-13-2018, Nature Sustainability, doi:10.1038/s41893-018-0164-3)//ddv -- figures omitted

State of the Anthropocene operating space

At the global scale, increasing levels of resistance constrain longterm opportunities to benefit from antibiotics and pesticides in human health and in food, fuel and fibre production. The beginning of the **Great Acceleration** — the period during which the rate of human impact on Earth system greatly increased — sometimes serves as the point marking the onset of the Anthropocene113. Using this starting date, the early Anthropocene in the 1950s was characterized by vast opportunities to apply new and more efficacious biocides. However, as resistance spread to a broader set of available biocides, the operating space provided by biocide susceptibility declined and the risk increased of crossing a threshold beyond which current practices cannot continue. If organisms become resistant to all commonly available biocides, this type of pan-resistance will not necessarily be easily reversed but is likely to continue to be present at some frequency33,34. Pan-resistance therefore constitutes a possible **tipping point** in the opportunity for human society to benefit from biocides and biocide susceptibility. The question arises as to whether we have already crossed the safe zones of the Anthropocene operating space for biocide susceptibility.

**[FIGURE 5 OMITTED]**

To formalize and assess the current state of the operating space in major groups of organisms, we follow the paradigm for the assessment of the planetary boundaries that set out to evaluate key functions and tipping points of the Earth system114,115. We set out three zones of increasing risk for current biocide use practices: the ‘safe’, ‘uncertain’ and ‘surpassed’ zones. For antibiotics, we assess susceptibility in Gram-negative and Gram-positive bacteria separately, given their differences in cell wall architecture which helps to determine innate resistance. For pesticides, we assess insect susceptibility to genetically engineered Bt-cropping systems as well as plant glyphosate susceptibility in genetically engineered herbicide-resistant cropping systems. This is supplemented with a general assessment of insecticide and herbicide susceptibility (Fig. 5).

As the relationship between biocide use and resistance can be complex, and depends on historical patterns, it is desirable to use the degree of susceptibility as a control variable rather than the rate of biocide use. We define the safe zone as extending from the state of no relevant resistance to the presence of single biocide resistance at low frequencies and with many other available biocides. The uncertain zone of increasing risk is entered once one of two criteria is fulfilled: (1) multiple biocide resistance is observed and less desirable treatments must be applied, or (2) single biocide resistance is common with some, but few, alternatives. The surpassed zone is entered once resistance is observed to all relevant biocides (panresistance). In the case of genetically engineered cropping systems based on use of a single biocide or single group of insecticidal toxins, the surpassed criterion translates to common resistance to that biocide or available crop toxins.

Like the nine planetary boundaries defining the human operating space of the Holocene114,115, the global pools of resistance and susceptibility genes exhibit varying degrees of connectivity and modularity. Connectivity is highest for horizontally transferable antimicrobial resistance genes, which effectively resembles a global system connected through travel, transport, and trade. It is lower for plant and arthropod susceptibility and resistance gene pools, which exhibit higher regional or local heterogeneity. For the latter, it is therefore also relevant to assess whether we may be in the zone of high risk at a regional level.

Using the above criteria, we assess the Anthropocene operating space for antibiotic susceptibility to be globally surpassed for Gram-negative bacteria and in the uncertain zone for Grampositive bacteria (Fig. 5). The recent discovery of plasmid-borne resistance genes to carbapenems (KPC67 and NDM-165) and to colistin (MCR-1116) means that some Gram-negative bacteria, in particular of the Enterobacteriaeceae family, are now effectively pan-resistant and join the list of pan-resistant Pseudomonas aeruginosa and species within the Acinetobacter genus117. For example, a well-documented case of pan-resistance occurred in 2015 in a hospital in Nevada, with the bacterium being resistant to 26 out of 26 available antibiotics29. More broadly, over 60% of 1,300 infectious disease specialists surveyed primarily in North America report encountering pan-resistant infections118. Gram-positive resistant infections are also of increasing concern, especially extremely drugresistant tuberculosis, multi-resistant S. aureus and Enterococcus117. However, in contrast to Gram-negative bacteria, several new treatments have recently become available for some of these infections or are likely to become available in the near future119,120. In addition, several countries have been able to lower resistance levels in some important Gram-positive infections such as methicillinresistant S. aureus121,122.

Pesticide susceptibility is generally assessed as being in the uncertain zone, but surpassed at the regional level in genetically engineered cropping systems owing to increasing resistance to foundational pesticides (Fig. 5). Insecticide resistance is assessed as being in the uncertain zone, given that multiple insecticide resistance is increasing in several pests, such as diamondback moth, Plutella xylostella, and green peach aphid, Myzus persicae123. Likewise, in plants, multiple herbicide resistance is increasing and leads to an assessment of general herbicide susceptibility as being in the uncertain zone124. For Bt crops, the spread of resistance to regionally available Bt-crop toxins in the US mid-west and in India leads to an assessment as regionally surpassed125. For herbicideresistant crops, the increasing spread of glyphosate resistance leads to its assessment as regionally surpassed124. Our global assessment therefore indicates that, for all major types of antibiotics and pesticides considered, we are today in a situation where resistance puts current practices at increasing risk (Fig. 5). This is a state that has gradually worsened to be fundamentally different now from when antibiotics and pesticides first were taken into use.

Sustainability in the Anthropocene

Global reliance on pesticides and antibiotics has led to dependence on the environmental supply of susceptible microorganisms, plants and animals. However, after more than half a century of biochemical arms-races wherein increasing levels of resistance have been addressed through the development of new biocides, an assessment of global trends in resistance suggests that we are entering a new phase in which levels of multiple resistance and pan-resistance put the sustainability of current practices at **increasing risk**. These risks are particularly pronounced for pesticide resistance in highly simplified transgenic cropping systems and for antibiotic resistance in Gram-negative bacteria.

Our assessment illustrates the great need to manage susceptibility to antibiotics and pesticides as an ecosystem service in order to preserve an operating space of biocide susceptibility in the Anthropocene. Promoting communities of susceptible microorganisms, plants and animals could also be a part of a larger effort to seek sustainable development through a **de-escalatory strategy** that maximizes the benefits of the ecosystem services associated with biocide susceptibility. A critical aspect includes initiatives to build diversity and redundancy to mitigate the risks associated with reliance on one or a small number of strategies for pest and pathogen control.

There is also a need to strengthen monitoring and surveillance of the operating space of biocide susceptibility to aid its management. Currently, globally standardized monitoring of biocide use and resistance levels suffers from large gaps and multiple inconsistencies. For example, for antibiotic resistance, use and resistance data can only be related to each other with the caveat that sales data come from overall use (including the community) whereas resistance data often arise from a hospital setting; these settings exhibit different resistance dynamics. For pesticides, global databases of insecticide and herbicide resistance only report individual cases and only a few countries are systematically monitoring the levels of resistance to insecticides and herbicides.

The unique challenges associated with promoting biocide susceptibility provide an opportunity to learn about coevolutionary dynamics between humans and the environment in a context of rapid ecological, social and technological change. So far, such studies of social-ecological coevolution have focused on the long-term perspective of how society adapts to human-induced environmental changes1,126,127. Given that biocide susceptibility can erode **rapidly** through **self-reinforcing** dynamics, its study can provide valuable insights for the management of other ecosystem services in the context of rapid change. Finally, the large-scale technological changes associated with the industrial revolution and the Great Acceleration may have created other environmental dependencies that should be considered as part of the Anthropocene operating space. Governing these new dependencies must be a priority for societies in achieving sustainability.

#### AMR is an existential threat, it’s nonlinear, and has an invisible tipping point

**Silverman ’16** (Rachel Silverman – MPhil with Distinction in Public Health @ the University of Cambridge, Senior Policy Analyst and Assistant Director of Global Health Policy @ the Center for Global Development, focusing on global health financing and incentive structures, “Confronting Antimicrobial Resistance: Can We Get to Collective Action?” 19 April 2016, https://www.cgdev.org/blog/confronting-antimicrobial-resistance-can-we-get-collective-action)

Antimicrobial resistance is already causing huge harm – and the worst is yet to come.

To open the panel, Dr. Chan issued a serious warning about the size and scope of the AMR threat: “everyone will be affected if we do not address this problem.” AMR is already responsible for an estimated **700,000 global deaths each year**, 50,000 of which take place in the US and Europe. Extensively drug-resistant (XDR) tuberculosis—cases where the most effective first- and second-line drugs are rendered useless—infected an estimated 47,000 people worldwide in 2014, only one ‘last-line’ antimicrobial is available to reliably treat gonorrhea, and few new antimicrobial drugs are in the development pipeline. According to the latest review, **AMR could cause 10 million deaths each year by 2050**, with **knock-on effects** draining many **trillions from the global economy**. Summers suggested that AMR and potential pandemics, alongside climate change and nuclear proliferation, represent the top three **existential threats to life on earth** as we know it. And as Dr. Chan explained, the worst-case scenario implies **the end of modern medicine** as we know it.

Even worse, Summers suggested that AMR seems like a “**quintessential non-linear phenomenon**, and therefore more dangerous.” Year by year the effects are small and **mostly invisible**. But at some point in the future they could **suddenly become catastrophic**, like a “levee that doesn’t hold and unleashes a flood.” Dr. Chan concurred that “**the tipping point is not predictable** because…microbes are invisible. We don’t even know when they’re going to make the switch” to become resistant to existing drugs.

Antimicrobial efficacy is a global public good threatened by serious market failures.

In response to this huge threat, why don’t pharmaceutical companies invest in new antibiotics? “It does not pay” for them to do so, explained Osborne. Pharmaceutical companies want to invest in technologies that will make a lot of money, and soon; so long as other antibiotics remain effective, the market for new options will be tiny and unprofitable. Even worse, as Summers pointed out, “markets don’t reward preparations for disaster.” Even if a company successfully developed a new option, public pressure would likely force the company to **price the drug below market value** at the time the drug is needed most.

#### Incubation periods prevent burnout.

**Kelesidis ’15** (Theodoros Kelesidis – MD @ the University of Athens Medical School, Fellowship @ the UCLA School of Medicine, Specializes in Infectious Diseases. Mathew E. Falagas – MD @ the University of Athens Medical School, MSc in Epidemiology @ Harvard, Adjunct Assistant Professor of Medicine at Tufts University School of Medicine, Boston, Massachusetts, President, Board of Directors, Alfa Institute of Biomedical Sciences (AIBS), Athens, Greece, and Director, Infectious Diseases Clinic of Henry Dunant Hospital. “Substandard/Counterfeit Antimicrobial Drugs,” 18 March 2015, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4402958/)

Consequences for the Community

Counterfeit and/or substandard antimicrobial medicines may **promote antimicrobial resistance**.

Emergence of antimicrobial resistance as a result of **low-quality antimicrobials** has been reported with antimicrobials that are often used in combination therapy, such as antimalarials (45, 45, 123, 217,–220) and antituberculosis agents (1, 121, 221). The use of substandard products may lead to **underdosing of antibiotics**, which can **increase antimicrobial resistance** (2, 4, 8, 24, 222, 223). As a result, in some developing countries multidrug-resistant bacteria may emerge, and the development of travel may further promote the spread of drug-resistant bacteria **worldwide** (15, 17, 51). Furthermore, therapeutic failure **prolongs the period of contagiousness** and **increases the prevalence of infections** from multidrug-resistant pathogens in the community. With regard to malaria, WHO has recommended that if 10% of patients fail treatment, the malaria treatment guidelines should change (224). However, the contribution of substandard/counterfeit medicines to treatment failure for malaria needs to taken into account and addressed in future research studies.

Low-quality antimicrobials **may significantly decrease confidence** in the efficacy of certain antibiotics.

Poor-quality antimicrobials may lead physicians to **lose confidence** in specific antibiotics and thus to use broad-spectrum antibiotics as the drugs of choice for infections (215, 225). According to the WHO, this may lead to loss of efficacy of relatively inexpensive drugs and will promote the use of more expensive antibiotics that patients in developing countries are not able to afford. The public confidence in health care systems and in governments **may decline significantly**. If patients with infectious diseases do not take antimicrobials due to lack of trust in their efficacy, **they remain infectious** and pose risks for **global public health**.

## Yes Transition

### 2NC --- Support Now

#### Support’s latent now---proves transition is possible.

I. F. **Thomas &** N. A. **Porter 18**. Thomas is Principal Partner, I F Thomas and Associates; Student, School of Science, RMIT University; Porter is Associate Professor, School of Science, RMIT University, Melbourne. 2018. “Existential Risk - Why We Urgently Need Our Population and Economy to Degrow.” Chemeca 2018, p. 44.

3 Economic degrowth 3.1 Introduction Most fear this as being a reversion back to **cave man living**. Although it might involve less hours of employment per individual and greater sharing of ‘the commons’, it is fairer and also **less traumatic** than the **inevitable global collapse** if we keep on the way we are. Sharing of the commons needs to be equal among all human beings and all other species. When most people consider it important to protect flora, and fauna species other than humans, they are driven by the potential good which may result for humans by doing so. What we need to do is to share and protect all of the commons because it is morally right to do so. How often do we consider the deaths of birds when a jet aircraft strikes them - we usually only think of the demise of the aircraft and of its occupants. Similarly, we see the solution to the rapidly growing suburban kangaroo population as being to ‘cull’ them. We see road-kill as unfortunate rather than we being the sole cause of it – we care only about the impact on our cars and ourselves. Although there are indications of collapse in our economy such as the current fuel crisis and exponentially growing population, **complete** economic collapse has **to-date** been averted by **technological** advances and by **exploitation of the environment**. It is likely that **this cannot continue**. Instead of using our advanced technology in this way, with careful application and sufficient wisdom, we can use it to achieve **equality and sustainability** for all people, **reversal of the greenhouse effect** and the **halting** of **extinctions** of other species. To achieve this, the **mantra of ‘economic growth’ needs to desist** in favour of, for example, ‘ecological sustainability’.in conjunction with selective ‘economic **degrowth’**. Current advocates of sustainable growth are really **growth economists** attempting to **disguise themselves** as caring for the environment. The two terms ‘**sustainable’** and ‘**growth’** placed together is an **oxymoron**. Degrowth is **already underway** in the developed world consequent upon the internet. Other individual actions are happening such as the **100 Resilient Cities movement**, **Tiny House Movement**, **Voluntary Simplicity Movement**, **Transition Towns** movement, **Creative Commons**, **Cohousing** and free and open exchange of information in the form of Peer-to-Peer (**P2P**) practices. Further, advocates of degrowth suggest that developing countries should be allowed to continue growing. Unfair as it may seem, even this could lead to catastrophe. 9 Regardless of how we achieve it, degrowth needs to be an action voluntarily entered into rather than being imposed upon us – a consequence of collective realisation (source: Crisis or opportunity? Economic degrowth for social equity and ecological sustainability. Introduction to this special issue François Schneider, Giorgos Kallis, Joan Martinez-Alier). 3.2 The economic degrowth declaration of 2008 Formalisation of the expression ‘economic degrowth’ occurred in a workshop at a conference held in Paris in 2008. In it a declaration was formulated as follows :- “We, participants in the Economic Degrowth for Ecological Sustainability and Social Equity Conference held in Paris on April 18–19, 2008 make the following declaration: 1. Economic growth (as indicated by increasing real GDP or GNP) represents an increase in production, consumption and investment in the pursuit of economic surplus, inevitably leading to increased use of materials, energy and land. 2. Despite improvements in the ecological **efficiency** of the production and consumption of goods and services, global economic growth has resulted in increased **extraction** of natural resources and increased waste and emissions. 3. Global economic growth has not succeeded in reducing **poverty** substantially, due to unequal exchange in trade and financial markets, which has increased **inequality** between countries. 4. As the established principles of **physics** and **ecology** demonstrate, there is an **eventual limit to the scale of global production and consumption** and to the scale national economies can attain without imposing environmental and social costs on others elsewhere or on future generations. 5. The best available scientific evidence indicates that the global economy has **grown beyond ecologically sustainable limits**, as have many national economies, especially those of the wealthiest countries (primarily industrialised countries in the Global North). 6. There is also mounting evidence that global growth in production and consumption is **socially unsustainable** and uneconomic (in the sense that its costs outweigh its benefits). 7. By using more than their legitimate share of global environmental resources, the wealthiest nations are effectively reducing the environmental space available to poorer nations, and imposing adverse environmental impacts on them. 8. If we do not respond to this situation by bringing global economic activity into line with the capacity of our ecosystems, and redistributing wealth and income globally so that they meet our societal needs, the result will be a process of **involuntary and uncontrolled economic** decline or **collapse**, with potentially serious social impacts, especially for the most disadvantaged. We therefore call for a paradigm shift from the general and unlimited pursuit of economic growth to a concept of “right-sizing” the global and national economies. 1. At the global level, “right-sizing” means reducing the global ecological footprint (including the carbon footprint) to a sustainable level. 2. In countries where the per capita footprint is greater than the sustainable global level, right-sizing implies a reduction to this level within a reasonable time-frame. 3. In countries where severe poverty remains, right-sizing implies increasing consumption by those in poverty as quickly as possible, in a sustainable way, to a level adequate for a decent life, following locally determined poverty-reduction paths rather than externally imposed development policies. 4. This will require increasing economic activity in some cases; but redistribution of income and wealth both within and between countries is a more essential part of this process. 10 The paradigm shift involves degrowth in wealthy parts of the world. 1. The process by which right-sizing may be achieved in the wealthiest countries, and in the global economy as a whole, is “degrowth”. 2. We define degrowth as a voluntary transition towards a just, participatory, and ecologically sustainable society. 3. The objectives of degrowth are to meet basic human needs and ensure a high quality of life, while reducing the ecological impact of the global economy to a sustainable level, equitably distributed between nations. This will not be achieved by involuntary economic contraction. 4. **Degrowth** requires a **transformation of the global economic system** and of the policies promoted and pursued at the national level, to allow the reduction and ultimate eradication of absolute poverty to proceed as the global economy and unsustainable national economies degrow. 5. Once right-sizing has been achieved through the process of degrowth, the aim should be to maintain a “steady state economy” with a relatively stable, mildly fluctuating level of consumption. 6. In general, the process of degrowth is characterised by: • an emphasis on quality of life rather than quantity of consumption; • the fulfilment of basic human needs for all; • societal change based on a range of diverse individual and collective actions and policies; • substantially reduced dependence on economic activity, and an increase in free time, unremunerated activity, conviviality, sense of community, and individual and collective health; • encouragement of self-reflection, balance, creativity, flexibility, diversity, good citizenship, generosity, and non-materialism; • observation of the principles of equity, participatory democracy, respect for human rights, and respect for cultural differences. 7. Progress towards degrowth requires immediate steps towards efforts to mainstream the concept of degrowth into parliamentary and public debate and economic institutions; the development of policies and tools for the practical implementation of degrowth; and development of new, non-monetary indicators (including subjective indicators) to identify, measure and compare the benefits and costs of economic activity, in order to assess whether changes in economic activity contribute to or undermine the fulfilment of social and environmental objectives”. 3.3 The economic degrowth declaration of 2010 The conference held in Barcelona also prepared a declaration as follows - “In the midst of an international crisis more than four hundred researchers, practitioners and civil society members from forty countries gathered in Barcelona in March 2010 for the Second International Conference on Degrowth. The Declaration of the First International Conference in Paris in 2008 noted the looming multidimensional crisis, which was not just financial, but also economic, social, cultural, energetic, political and ecological. The crisis is a result of the failure of an economic model based on growth. An international elite and a “global middle class” are causing havoc to the environment through conspicuous consumption and the excessive appropriation of human and natural resources. Their consumption patterns lead to further environmental and social damage when imitated by the rest of society in a vicious circle of status-seeking through the accumulation of material possessions. While irresponsible financial institutions, multi-national corporations and governments are rightly at the forefront of public criticism, this crisis has deeper structural causes. So-called anti-crisis measures that seek to boost economic growth will worsen inequalities and environmental conditions in the long-run. The illusion of a "debt-fuelled growth", ie forcing the economy to grow in order to pay debt, will end in social disaster, passing on economic and ecological debts to future generations and to the poor. A process of degrowth of the world economy is inevitable and will ultimately benefit the environment, but the challenge is how to manage the process so that it is socially equitable at national and global scales. This is the challenge of the Degrowth movement, originating in rich countries in Europe and elsewhere, where the change must start from. 11 Academics, activists and practitioners met in Barcelona to structure proposals toward an alternative, ecologically sustainable and socially equitable degrowth society. The conference was conducted in an inclusive and participatory way. In addition to standard scientific presentations, some 29 working groups discussed hands-on policies for degrowth and defined research questions, bringing together economic, social and environmental concerns. New ideas and issues absent from mainstream dialogue on sustainable development were put on the table: currencies and financial institutions, social security and working hours, population and resource consumption, restrictions to advertising, moratoria on infrastructure and resource sanctuaries, and many others. A wealth of new proposals evolved, including: facilitation of local currencies; gradual elimination of fiat money and reforms of interest; promotion of small scale, self-managed not-for-profit companies; defence and expansion of local commons and establishment of new jurisdictions for global commons; establishment of integrated policies of reduced working hours (work-sharing) and introduction of a basic income; institutionalization of an income ceiling based on maximum-minimum ratios; discouragement of overconsumption of non-durable goods and under-use of durables by regulation, taxation or bottom-up approaches; abandonment of large-scale infrastructure such as nuclear plants, dams, incinerators, high-speed transportation; conversion of car-based infrastructure to walking, biking and open common spaces; taxation of excessive advertising and its prohibition from public spaces; support for environmental justice movements of the South that struggle against resource extraction; introduction of global extractive moratoria in areas with high biodiversity and cultural value, and compensation for leaving resources in the ground; denouncement of top-down population control measures and support of women’s reproductive rights, conscious procreation and the right to free migration while welcoming a decrease in world birth rates; and decommercialisation of politics and enhancement of direct participation in decision-making. We assert that these proposals are not utopian: new redistributive taxes will address income inequality and finance social investments and discourage consumption and environmental damage, while reduced working hours with a reinforced social security system will manage unemployment. As the economy of wealthy parts of the world quietly contracts and our damage to the environment through new infrastructures and extraction activities is constrained, well-being will increase through public investments in low-cost social and relational goods. Every new proposal generates several new objections and questions. We do not claim to have a recipe for the future, but we can no longer pretend that we can keep growing as if nothing has happened. The folly of growth has come to an end. The challenge now is how to transform, and the debate has just begun.” 3.4 Conclusions on economic degrowth Four other **conferences on economic degrowth** for ecological sustainability and social equity have been held since Paris 2008 and Barcelona 2010 namely, Montreal 2012, Venice 2014, Leipzig 2014 and Budapest 2016. The 6th conference will be in Malmö, Sweden in August of this year. The author suggests that Australia should be considered for a future degrowth conference. With this kind of **growing** academic pressure and **publicity favouring degrowth**, we will **avoid** global catastrophe and **extinction provided we as a species unite to cause it to happen quickly enough**. The author adopts the positive as epitomised by Sam Alexander at the Melbourne Sustainable Society Institute at the University of Melbourne (Life in a degrowth economy and why you might actually enjoy it, 02Oct2014) and quotes him for example :- (i) When one first hears calls for degrowth, it is easy to think that this new economic vision must be about hardship and deprivation; that it means going back to the stone age, resigning ourselves to a stagnant culture, or being anti-progress. Not so. (ii) Degrowth would liberate us from the burden of pursuing material excess. We simply don’t need so much stuff – certainly not if it comes at the cost of planetary health, social justice, and personal well-being. Consumerism is a gross failure of imagination, a debilitating addiction that degrades nature and doesn’t even satisfy the universal human craving for meaning. (iii) In a degrowth society we would aspire to localise our economies as far and as appropriately as possible. This would assist with reducing carbon-intensive global trade, while also building resilience in the face of an uncertain and turbulent future. (iv) Through forms of direct or participatory democracy we would organise our economies to ensure that everyone’s basic needs are met, and then redirect our energies away from economic 12 expansion. This would be a relatively low-energy mode of living that ran primarily on renewable energy systems. (v) Renewable energy cannot sustain an energy-intensive global society of high-end consumers. A degrowth society embraces the necessity of “energy descent”, turning our energy crises into an opportunity for civilisational renewal. (vi) We would tend to reduce our working hours in the formal economy in exchange for more home-production and leisure. We would have less income, but more freedom. Thus, in our simplicity, we would be rich. (vii) A degrowth transition to a steady-state economy could happen in a variety of ways. But the nature of this alternative vision suggests that the changes will need to be driven from the “bottom up”, rather than imposed from the “top down”. 4 Conclusions overall There is insufficient land available on Earth to provide for our current energy consumption level (550 EJ/yr) from biofuels alone such that drastic measures are needed to offset against the ‘post fossil fuel dilemma’. Nuclear power could provide a larger part of this but with fundamental flaws such as potential for serious accident, the lack of means for disposal of long-lasting radioactive waste and the potential for plutonium-239 to be used in nuclear weapons. Safer nuclear power is available by using the thorium cycle and perhaps by about 2030, by the use of nuclear fusion. Ample feedstocks are available for both. Solar-voltaic and solar-thermal power generation together with these safer nuclear power options may suffice but the problem is that we are consuming ever more energy – we are not static and we are not sustainable. To **survive** nominally **beyond 2100** therefore, it is evident that we need to **depopulate and** to **degrow** economically. Richer nations need to voluntarily **reduce consumption** to allow people of poorer nations to at least have sufficient to survive. A much more drastic reduction in use of ‘the commons’ by developed countries must be achieved if we are also to sustain the environment and avoid further extinctions of fauna and flora.

### 2NC --- Public Momentum

#### A forced transition causes a mindset shift – squo climate change is already proving growth unsustainable

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Degrowth proposals are to a certain extent utopian—there is no “topos” (place) where they fully exist. But are there viable transition pathways toward this vision? Thinking of open and plural utopias helps to free the imagination to conceive worlds that motivate changes in our actions today, producing something different tomorrow, although not necessarily the utopia initially imagined (148). Although some degrowth proposals (76) can be criticized as wishful thinking, sound points for studying and starting transitions are found in real existing societies living without growth (see Section 5) and radical social experiments that embody and anticipate degrowth utopias. What Muraca (133) calls concrete utopias illuminate potential openings for paths forward that are already emerging. The fate of such openings will play out amid coevolutionary processes involving institutional organization, technology, environmental conditions, values, and knowledge (149). Although current worlds seem trapped in continuity, history is rife with surprise, fueled by the incessant creativity of humans and their ability to come up with new ways of seeing the world and new forms of living and producing their societies and their environments (150).From this perspective, recent debates on the possibility of voluntary paths to degrowth versus the more probable event of forced reductions provoked by an involuntary crash (10, 77) is misleading (78). Change is always voluntary and is always enacted through unchosen conditions (such as the availability of fossil fuels or the thermodynamics of production processes). History is shaped by collective action or inaction. **As economic** **growth falters and as the toll of its limits and costs becomes unbearable, a transition in the direction of something akin to degrowth could emerge** from dynamics among unforeseeable reactions, experiments, adaptations, and political struggles. Such a transition does not have to be in the name of degrowth. As with the eco-communes of Barcelona that Cattaneo & Gavaldà (107) studied, the reduction of resource use can be the outcome of broader processes of social transformation driven by an ambition to co-live autonomously and democratically (1).In contexts where **life under growth is already disastrous for many people**, and **threatens to become even more so with climate change and the overshooting of planetary boundaries**, literature reviewed here studies, envisages, and advocates changes in institutions, policies, values, understandings, and everyday modes of living. Without the voluntary work to conceive and embody alternative ideas, explanations, practices, and institutions today, an involuntary end to growth may well lead to a state of continual economic depression in which islands of wealth are sustained in seas of deprivation, without pretense of democracy and social justice.

### 2NC --- Cultural Shifts

#### Cultural changes during the collapse would make degrowth desirable

Samuel **Alexander 17**, lecturer with the Office for Environmental Programs, University of Melbourne, and research fellow, Melbourne Sustainable Society Institute, 2017, “Frugal Abundance in an Age of Limits: Envisioning a Degrowth Economy,” in Transitioning to a Post-Carbon Society, p. 159-161

Introduction ¶ This chapter considers whether, or to what extent, different forms of “austerity” exist, or could exist, in relation to material standards of living. Could an austerity externally imposed be experienced very differently from an austerity voluntarily embraced? The analysis seeks to show, somewhat paradoxically, perhaps, that although reduced consumption and production within existing capitalist economies tends to impact negatively on social well-being—representing one form of “austerity”—reduced consumption and production within **different economic frameworks**, and within different value systems, could open up space for a positive, enriching form of austerity. This latter form of austerity, it will be argued, has the potential to increase social and ecological well-being in an age of **environmental limits** (Meadows et al. 2004; Jackson 2009; Turner 2014). It is extremely important, of course, that these two austerities are not confused, and the present inquiry into the potential for enriching forms of austerity must not be interpreted as defending the neoliberal or capitalist forms of austerity being implemented in many economies today (see e.g. Hermann 2014; Pollin 2013). A distinction will be made, therefore, between an austerity of degrowth—which will be the focus of this analysis—and a capitalist austerity.¶ Even a cursory inquiry into the definition of austerity highlights the various ways this term can be understood. In recent years this notion has been used almost exclusively to refer to a macro-economic policy of **crisis management** provoked by the global financial crisis, where governments cut social services in an attempt to reduce budget deficits and stimulate growth (see e.g. Ivanova 2013). One online dictionary defines austerity as a “severe and rigid economy”, and that is certainly how many people would experience austerity under capitalism today. Note how austerity in this sense is oblivious to the limits to growth critique. Far from trying to move beyond the growth paradigm, austerity under capitalism is defended on the grounds that it will help get the engine of growth started again.¶ But this is a relatively new way of understanding austerity. Prior to the global financial crisis, austerity did not refer primarily to a strict macroeconomic policy that cut social services. Instead, online dictionary definitions define austerity as “simple or plain”, “not fancy”, “unadorned”, or “a situation where money is spent only on things that are necessary”. In this very different sense of austerity, the term can be understood as a synonym for **frugality or simplicity of living** (see Alexander and McLeod 2014), and it is this second form of austerity that will be the focus of this chapter. It is a form of austerity that is arguably **necessary in an age of limits**—necessary, that is, if we are to turn current economic and environmental crises into **opportunities** by way of a degrowth transition (Latouche 2009; Schneider et al. 2010; Kallis 2011; Alexander 2015).¶ Among other things, a degrowth transition will involve examining or reexamining what is truly necessary to live a dignified life, as well as letting go of so much of what is superfluous and wasteful in consumer societies today (Vale and Vale 2013; Hamilton and Denniss 2005). A strong but perhaps counter-intuitive case can be made that the wealthiest regions of the world can get by with a far lower material standard of living and yet increase quality of life (Alexander 2012a; Trainer 2012; Schor 2010; Wilkinson and Pickett 2010), and this is the paradox of simplicity that lies at the heart of what I am calling an “austerity of degrowth”. A degrowth economy may be “austere” (but sufficient) in a material sense, especially in comparison to the cultures of consumption prevalent in developed regions of the world today. But such austerity could also liberate those developed or over-developed societies from the shackles of consumerist cultures (Kasser 2002), freeing them from materialistic conceptions of the good life and opening up space for seeking prosperity in various non-materialistic forms of satisfaction and meaning.¶ Serge Latouche (2014) writes of degrowth as being a society of “frugal abundance”, but what would this look like and how would it be experienced in daily life? The degrowth movement to date has focused a great deal on the macro-economic and political dimensions of “planned economic contraction” (Alexander 2012b), but less attention has been given to the implications such contraction would have on our lives, at the personal and community levels. Consequently, this area of neglect calls for closer examination, because it is at the personal and community levels where degrowth would be experienced, first and foremost. Indeed, an inquiry into the lived reality of degrowth may be one of the best ways of describing and understanding what we mean by degrowth, moving beyond vague abstractions or “top down” macro-economic and political perspectives. In other words, we might gain a clearer understanding of degrowth by imagining someone mending their clothes or sharing their hammer or bicycle in conditions of scarcity, than by imagining a new financial system or political framework.¶ Whatever the case, this chapter focuses on the former perspective and explores how an austerity of degrowth may be experienced at the personal and social levels. This inquiry follows coherently from the various arguments in favour of degrowth that have been developing in recent years, which have offered many compelling reasons why we should “degrow” (see generally, Latouche 2009; Alexander 2015). But it is also important to explore more closely what degrowth would actually look like and how it might be experienced. After all, if people cannot **envision the degrowth alternative** with sufficient **clarity**, and see it as desirable, it is unlikely that a **large social movement** will arise to bring a degrowth economy into existence.

## Answers To

### 2NC --- AT Decoupling --- Studies Bad

#### The decoupling theory is false – their studies ignore outsourcing energy-intensive industries

**Kan et al ‘19**, - researchers at the Laboratory of Systems Ecology and Sustainability Science at the College of Engineering in Peking, (Siyi Kan, Bin Chen, Guoqian Chen, "Worldwide energy use across global supply chains: Decoupled from economic growth?" Applied Energy Volume 250, Pages 1235-1245) //AL

Decoupling performances under multiple perspectives reflect distinct ways of an economy’s dependence on energy, based on the positions the economy holds in global supply chains. Extraction-based decoupling performances reflect an economy’s dependence on energy from extraction either as resources to support domestic use or as a kind of tradable commodity enabling downstream energy use in the supply chains. For instance, many years of weak decoupling between GDP and energy production in Russia implies Russia’s falling dependence on energy production to support economic growth, though Russia was still an important primary supplier of primary energy. Decoupling states under production-based principle mirror an economy’s dependence on domestic energy use as heat and power to support sectoral operation (e.g., transport) and production (e.g., manufacturing). For instance, USA saw decoupling between GDP and total direct primary energy use in many years, indicating USA became less reliant on domestic energy use to maintain one unit of GDP growth. Several factors are associated with domestic energy use, such as economic scale, domestic energy efficiency and industrial structure. Energy efficiency was once considered as the main factor that contributes to energy-economy decoupling, and high expectations have been placed on domestic energy efficiency improvement to reduce energy use [66]. However, with growing environmental concerns and increasing degree of specialization and cooperation, more and more economies tend to upgrade industrial structure (e.g., deindustrialization and tertiarization) by outsourcing energy-intensive industries, which shifts energy use abroad [38]. Therefore, it is imperative to investigate consumption-based decoupling performances, which take into account an economy’s off-site energy use triggered by international trade. Decoupling performances under consumption-based principle reveal to what extent an economy relies on global energy use (both home and abroad) to support its final consumption. In the case of USA, several years of negative decoupling between GDP and embodied energy use took place, manifesting more reliance on energy use across global supply chains to develop USA economy, despite decreasing reliance on domestic energy use as discussed above. EU and Japan also witnessed similar phenomenon. By contrast, China saw negative decoupling under production-based principle but saw weak decoupling under consumption-based principle in 2002–2005. With processing trade, China acted as an important producer to produce extensive intermediate or final products aimed for export [67], triggering heavier reliance on domestic energy use than energy embodied in final consumption. The situation was reversed after 2008, perhaps due to China’s increasing domestic demand as seen in Section 3 and relocation of some energy-intensive industries from China to other developing countries [68]. In sum, analyses under all the principles can provide useful decoupling information, while each of them solely is not sufficient to guide policy makings. Extraction-based and production-based principles avoid obstacles in cross-border cooperation to some degree, making it easier for an individual economy to account, set targets, monitor and implement related policies. Therefore, an individual economy can actively take actions to achieve local energy-economy decoupling by reference to extraction-based and production-based results. However, such positive decoupling in one economy may be achieved at the cost of negative decoupling in other economies. Analyses on this basis ignore international energy stress shift, and may underestimate an economy’s actual energy use. As a result, they can cause decoupling delusion and consequent shallow optimism for policy makers, which in turn leads to loosening regulations and even compromises global efforts to obtain energy-economy decoupling. Consumption-based investigations are therefore indispensable to avoid deceptive image of decoupling and offer complementary views. But actions from consumption-based principles are also confronted with many barriers when it comes to practicability. One major impediment is the availability of timely detailed and precise data to conduct consumption-based calculations. Accurate calculations require mega data of high regional and sectoral resolution (e.g. international and intersectoral trade data), which is difficult to collect. Another is coordination between different economies. It is hard to define responsibility of all the agents along global supply chains, and integrated international cooperation under agreed-upon norms is therefore difficult to achieve. Given all this, decoupling analyses from multiple analyses should be integrated in policy makings to provide holistic picture of global and regional decoupling states, in order to promote efforts towards both local and global energy-economy decoupling. 4.2. The necessity of decoupling analyses for different energy sources  Decoupling analyses for different energy sources uncover the varying degrees of an economy’s dependence on different energy sources, which can reveal where the economy is situated in the trajectory towards clean energy mix. However, this is concealed in the decoupling analyses for total primary energy consumption. What is more, another delusion may occur when sustainability of an energy system is assessed based on decoupling indicators measured by total primary energy use. For instance, USA economy strongly decoupled from total embodied primary energy use during 2001–2003, while it still negatively decoupled from embodied coal consumption. Thus, states of decoupling measured by total primary energy do not necessarily represent a clean energy use pattern. Meanwhile, USA economy and total embodied primary energy use were in negative decoupling states during 2007–2008, mainly because USA was more reliant on embodied natural gas, nuclear energy and renewables. This indicates negative decoupling states do not necessarily represent unsustainable energy systems either. This kind of delusion also exists in global decoupling analyses. Results show that global GDP and total primary energy use were in weak decoupling in most of the years during 2000 to 2011. However, the world economy still coupled with coal use, which poses a great barrier to global carbon mitigation.

#### AR5 mitigation scenarios fail – Carbon sequestration unfeasible and no empirical support for successful decoupling

**Hickel and Kallis ‘19**, - Hickel is a researcher at the university of London. Kallis is an environmental scientist who has a PhD in Environmental Policy and Planning  and a Masters in Environmental Engineering and a Bachelors degree in Chemistry, both from Imperial College, London. He has worked in the past at the Office of Scientific and Technological Assessment of the European Parliament (1995-1996) contributing to the revision of the EU water directives and served as a consultant for UNEP-MAP, PAP-RAC preparing guidelines for integrated urban water management in coastal areas (2004). He collaborated with R.Norgaard at the University of California at Berkeley to develop the concept of socio-ecological coevolution. His current work explores the idea of sustainable de-growth. (Jason and Giorgos, "Is Green Growth Possible?" New Political Economy, 4-17-2019) //AL

The IPCC’s Fifth Assessment Report (AR5) includes 116 mitigation scenarios that are consistent with Representative Concentration Pathway 2.6 (RCP2.6), which offers the best chances of staying below 2°C. All of these scenarios are green growth scenarios in that they stabilise global temperatures while global GDP continues to rise. Rising GDP is a built-in feature of the Shared Socio-Economic Pathways (SSPs), which form the basis for the IPCC mitigation scenarios (Kuhnhenn [2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Kuhnhenn, K., 2018. Economic growth in mitigation scenarios: a blind spot in climate science. Berlin: Heinrich Boll Foundation. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&author=K.+Kuhnhenn&title=Economic+growth+in+mitigation+scenarios%3A+a+blind+spot+in+climate+science)). AR5 warns, however, that these scenarios ‘typically involve temporary overshoot of atmospheric concentrations’ and ‘typically rely on the availability and widespread deployment of bioenergy with carbon capture and storage (BECCS)’ ([2014](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)IPCC, 2014. Climate change 2014 synthesis report – summary for policymakers. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=IPCC%2C+2014.+Climate+change+2014+synthesis+report+%E2%80%93+summary+for+policymakers.), p. 23). Indeed, the vast majority scenarios for 2°C (101 of the 116) rely on BECCS to the point of achieving negative emissions.[8](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)8 Another 9 scenarios include some BECCS, but not to the point of achieving negative emissions. BECCS entails growing large tree plantations to sequester CO2 from the atmosphere, harvesting the biomass, burning it for energy, capturing the CO2 emissions at source and storing it underground. Relying on these ‘negative emissions technologies’ allows for a much larger carbon budget (about double the actual size) by assuming that we can successfully reduce global atmospheric carbon in the second half of the century. BECCS is highly controversial among climate scientists. It was first proposed by Obersteiner et al. ([2001](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Obersteiner, M., et al., 2001. Managing climate risk. Laxenburg: International Institute for Applied Systems Analysis.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0049&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1126%2Fscience.294.5543.786b), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2001&author=M.+Obersteiner&title=Managing+climate+risk)) and Keith ([2001](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Keith, D.W., 2001. Sinks, energy crops and land use: coherent climate policy demands an integrated analysis of biomass. Climatic change, 49 (1), 1–10.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1023%2FA%3A1010617015484), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000167812800001), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2001&pages=1-10&issue=1&author=D.W.+Keith&title=Sinks%2C+energy+crops+and+land+use%3A+coherent+climate+policy+demands+an+integrated+analysis+of+biomass)) at the turn of the century. IPCC modelling teams began including it in their scenarios from 2005, despite having no firm evidence of its feasibility. With the publication of AR5, BECCS was enshrined as a dominant assumption. Obersteiner has expressed alarm at the rapid uptake of his idea; he considers BECCS to be what he calls a ‘risk-management strategy’, or a ‘backstop technology’ in case climate feedback loops turn out to be worse than expected, and says the IPCC has ‘misused’ it by including it in regular scenarios to take pressure off of conventional mitigation pathways (i.e. emissions reductions) (Hickman [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Hickman, L. 2016. The history of BECCS. Carbon Brief.<https://www.carbonbrief.org/beccs-the-story-of-climate-changes-saviour-technology>. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Hickman%2C+L.+2016.+The+history+of+BECCS.+Carbon+Brief.+https%3A%2F%2Fwww.carbonbrief.org%2Fbeccs-the-story-of-climate-changes-saviour-technology.)). In Keith’s ([2001](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Keith, D.W., 2001. Sinks, energy crops and land use: coherent climate policy demands an integrated analysis of biomass. Climatic change, 49 (1), 1–10.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1023%2FA%3A1010617015484), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0044&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000167812800001), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2001&pages=1-10&issue=1&author=D.W.+Keith&title=Sinks%2C+energy+crops+and+land+use%3A+coherent+climate+policy+demands+an+integrated+analysis+of+biomass)) initial formulation of the idea, he noted that while ‘measured use’ of biomass could help mitigate environmental problems, ‘large scale use of cropped biomass will not.’ Anderson and Peters ([2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Anderson, K., and Peters, G., 2016. The trouble with negative emissions. Science, 354 (6309), 182–183.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0004&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1126%2Fscience.aah4567), [[PubMed]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0004&dbid=8&doi=10.1080%2F13563467.2019.1598964&key=27738161), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0004&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000387816500024), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=182-183&issue=6309&author=K.+Anderson&author=G.+Peters&title=The+trouble+with+negative+emissions)) point out that the ‘allure’ of BECCS is due to the fact that it allows politicians to postpone the need for rapid emissions reductions: ‘BECCS licenses the ongoing combustion of fossil fuels while ostensibly fulfilling the Paris Commitments.’ There are a number of concerns. First, the viability of power generation with CCS has never been proven to be economically viable or scalable; it would require the construction of 15,000 facilities (Peters [2017](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Peters, G., 2017. Does the carbon budget mean the end of fossil fuels? Climate News. Available from: <https://www.cicero.oslo.no/en/posts/klima/does-the-carbon-budget-mean-the-end-of-fossil-fuels>. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Peters%2C+G.%2C+2017.+Does+the+carbon+budget+mean+the+end+of+fossil+fuels%3F+Climate+News.%C2%A0Available+from%3A%C2%A0https%3A%2F%2Fwww.cicero.oslo.no%2Fen%2Fposts%2Fklima%2Fdoes-the-carbon-budget-mean-the-end-of-fossil-fuels.)). Second, the scale of biomass assumed in the AR5 scenarios would require plantations covering land two to three times the size of India, which raises questions about land availability, competition with food production, carbon neutrality, and biodiversity loss (Smith et al. [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Smith, P., et al., 2016. Biophysical and economic limits to negative CO2emissions. Nature climate change, 6 (1), 42–50.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0061&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fnclimate2870), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0061&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000367030800017), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=42-50&issue=1&author=P.+Smith&title=Biophysical+and+economic+limits+to+negative+CO2+emissions); Heck et al. [2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Heck, V., et al., 2018. Biomass-based negative emissions difficult to reconcile with planetary boundaries. Nature climate change, 8, 151–155.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0027&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fs41558-017-0064-y), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0027&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000423842400018), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&pages=151-155&author=V.+Heck&title=Biomass-based+negative+emissions+difficult+to+reconcile+with+planetary+boundaries)). Third, the necessary storage capacity may not **exist** (De Coninck and Benson [2014](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)De Coninck, H., and Benson, S.M., 2014. Carbon dioxide capture and storage: issues and prospects. Annual review of environment and resources, 39, 243–270.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0012&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1146%2Fannurev-environ-032112-095222), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0012&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000348446900010), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2014&pages=243-270&author=H.+De+Coninck&author=S.M.+Benson&title=Carbon+dioxide+capture+and+storage%3A+issues+and+prospects), Global CCS Institute [2015](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Global CCS Institute, 2015. Global status of CCS 2015: summary report. Melbourne. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Global+CCS+Institute%2C+2015.+Global+status+of+CCS+2015%3A+summary+report.%C2%A0Melbourne.)). Anderson and Peters conclude that ‘BECCS thus remains a highly speculative technology’ and that relying on it is therefore ‘an unjust and high stakes gamble’: if it is unsuccessful, ‘society will be locked into a high-temperature pathway.’ This conclusion is shared by a growing number of scientists (e.g. Fuss et al. [2014](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Fuss, S., et al., 2014. Betting on negative emissions. Nature climate change, 4 (10), 850–853.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0016&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fnclimate2392), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0016&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000344597000010), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2014&pages=850-853&issue=10&author=S.+Fuss&title=Betting+on+negative+emissions), Vaughan and Gough, [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Vaughan, N.E., and Gough, C., 2016. Expert assessment concludes negative emissions scenarios may not deliver. Environmental research letters, 11, 095003.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0073&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1088%2F1748-9326%2F11%2F9%2F095003), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0073&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000384060600001), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=095003&author=N.E.+Vaughan&author=C.+Gough&title=Expert+assessment+concludes+negative+emissions+scenarios+may+not+deliver), Larkin et al. [2017](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Larkin, A., et al., 2017. What if negative emissions technologies fail at scale? Climate policy, 18, 690–714.[[Taylor & Francis Online]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0047&dbid=20&doi=10.1080%2F13563467.2019.1598964&key=10.1080%2F14693062.2017.1346498&tollfreelink=139069_3867371_5fbf43978b04d74c2fa259ad0ace059e6c66b011d8e943515ccd6189b1bb9a79), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2017&pages=690-714&author=A.+Larkin&title=What+if+negative+emissions+technologies+fail+at+scale%3F), Van Vuuren et al. [2017](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Van Vuuren, D.P., et al., 2017. Open discussion of negative emissions is urgently needed. Nature energy, 2, 902–904.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0071&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1038%2Fs41560-017-0055-2), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0071&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000418244000011), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2017&pages=902-904&author=D.P.+Van+Vuuren&title=Open+discussion+of+negative+emissions+is+urgently+needed)), and by the European Academies’ Science Advisory Council ([2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)European Academies Science Advisory Council. 2018. Negative emission technologies: what role in meeting Paris agreement targets? EASAC Policy Report 35. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=European+Academies+Science+Advisory+Council.+2018.+Negative+emission+technologies%3A+what+role+in+meeting+Paris+agreement+targets%3F+EASAC+Policy+Report+35.)). It is not clear that we can justifiably rely on BECCS, an unproven technology, to underwrite green growth theory. If we accept this point, then we must return to asking whether it is possible to maintain growth without relying on BECCS to stay within the carbon budgets consistent with the Paris Agreement. Without BECCS, global emissions need to fall to net zero by 2050 for 1.5°C, or by 2075 for 2°C.[9](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)9 PWC Low Carbon Economy Index 2017.View all notes This entails reductions of 6.8 per cent per year and 4 per cent per year, respectively ([Figure 5](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964#F0005)). Theoretically, this can be accomplished with (a) a rapid shift to 100 per cent renewable energy to eliminate emissions from fossil fuel combustion (Jacobson and Delucchi [2011](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Jacobson, M.Z., and Delucchi, M., 2011. Providing all global energy with wind, water, and solar power, part i: technologies, energy resources, quantities and areas of infrastructure, and materials’. Energy policy, 39 (3), 1154–1169.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0039&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1016%2Fj.enpol.2010.11.040), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0039&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000288971100014), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2011&pages=1154-1169&issue=3&author=M.Z.+Jacobson&author=M.+Delucchi&title=Providing+all+global+energy+with+wind%2C+water%2C+and+solar+power%2C+part+i%3A+technologies%2C+energy+resources%2C+quantities+and+areas+of+infrastructure%2C+and+materials%E2%80%99)); plus (b) afforestation and soil regeneration to eliminate emissions from land use change; plus (c) a shift to alternative industrial processes to eliminate emissions from the production of cement, steel, and plastic. The question is, can all of this be accomplished quickly enough? Only 6 of the 116 scenarios for 2°C in AR5 exclude BECCS. These work by assuming ‘optimal full technology’ in all other areas, plus mass afforestation, and with high mitigation costs. These represent theoretically possible pathways, but without any empirical evidence as to their feasibility. Results of empirical studies are not promising. Schandl et al. ([2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Schandl, H., et al., 2016. Decoupling global environmental pressure and economic growth: scenarios for energy use, materials use and carbon emissions. Journal of cleaner production, 132 (2016), 45–56.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0059&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1016%2Fj.jclepro.2015.06.100), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=45-56&issue=2016&author=H.+Schandl&title=Decoupling+global+environmental+pressure+and+economic+growth%3A+scenarios+for+energy+use%2C+materials+use+and+carbon+emissions)) model what might be achieved with aggressive mitigation policies, without relying on BECCS. Their high-efficiency scenario has a carbon price starting at $50 per ton (rising by 4 per cent per year to $236 by 2050) plus a doubling in the material efficiency of the economy due to technological innovations (improving from a historical average rate of 1.5 per cent per year up to 4.5 per cent). Schandl et al provide no evidence for the feasibility of the efficiency improvements that they assume. Even so, the result shows that with global growth of 3 per cent per year, annual emissions plateau to 2050 but do not decline. In this scenario, growth in energy demand outstrips the rate of decarbonisation, violating the carbon budgets for 1.5°C and 2°C.

### 2NC --- AT Decoupling --- Incompatible w/ Growth

#### Decoupling is infeasible absent decline in economic growth – status quo is 14% off even closest targets

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Another way to approach this question is by looking at projected rates of decoupling. If we assume global GDP continues to grow at 3 per cent per year (the average from 2010 to 2014), then decoupling must occur at a rate of 10.5 per cent per year for 1.5°C, or 7.3 per cent per year for 2°C. If global GDP grows at 2.1 per cent per year (as PWC predicts), then decoupling must occur at 9.6 per cent per year for 1.5°C, or 6.4 per cent per year for 2°C. All of these targets are beyond what existing empirical models indicate is feasible. The Schandl et al model indicates that decoupling can happen by at most 3 per cent per year under optimistic conditions. Other models arrive at similar conclusions. Before adopting BECCS assumptions, the IPCC ([2000](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)IPCC, 2000. Special report on emissions scenarios. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=IPCC%2C+2000.+Special+report+on+emissions+scenarios.)) projected decoupling of 3.3 per cent per year in a global best-case scenario. The C-ROADS tool (developed by Climate Interactive and MIT Sloan) projects decoupling of at most 4 per cent per year under the most aggressive possible abatement policies: high subsidies for renewables and nuclear power, plus high taxes on oil, gas and coal. All of these results fall short of the decoupling rate that must be achieved if the global economy continues to grow at expected rates. Holz et al. ([2018](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Holz, C., et al., 2018. Ratcheting ambition to limit warming to 1.5 C–trade-offs between emission reductions and carbon dioxide removal. Environmental research letters, 13 (6), 064028.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0031&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1088%2F1748-9326%2Faac0c1), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0031&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000434819300003), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2018&pages=064028&issue=6&author=C.+Holz&title=Ratcheting+ambition+to+limit+warming+to+1.5+C%E2%80%93trade-offs+between+emission+reductions+and+carbon+dioxide+removal)) find that if we rule out widespread use of negative emissions technologies, the required rate of decarbonisation for meeting the Paris Agreement is ‘well outside what is currently deemed achievable, based on historical evidence and standard modelling.’ The challenge is even more difficult for rich nations. Anderson and Bows ([2011](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Anderson, K., and Bows, A., 2011. Beyond ‘dangerous’ climate change: emission scenarios for a new world. Philosophical transactions of the royal society of London a: mathematical, physical and engineering sciences, 369 (1934), 20–44.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0003&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1098%2Frsta.2010.0290), [[PubMed]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0003&dbid=8&doi=10.1080%2F13563467.2019.1598964&key=21115511), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0003&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000284692300004), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2011&pages=20-44&issue=1934&author=K.+Anderson&author=A.+Bows&title=Beyond+%E2%80%98dangerous%E2%80%99+climate+change%3A+emission+scenarios+for+a+new+world)) have modelled the emissions reductions necessary for achieving a 50 per cent chance of staying under 2°C (more relaxed than the two-thirds chance that the UNFCC calls for), without BECCS. They proceed from the principle of ‘common but differentiated responsibility’, whereby rich nations (Annex-1 nations) make more aggressive emissions reductions than poor nations, owing to their greater historical responsibility for emissions and their greater capacity for managing the costs of transition. They assume that Non-Annex 1 nations defer peak emissions until 2025, and thereafter reduce emissions by 7 per cent per year. They acknowledge that these are extremely ambitious assumptions but consider them to be the most feasible compromise between practicality and equity. To stay within the remaining carbon budget, Annex 1 nations need to reduce emissions by 8–10 per cent per year, beginning in 2015. This model was developed with data up to 2010; as the remaining carbon budget is now smaller, Anderson estimates that Annex 1 nations need to reduce emissions by 12 per cent per year.[13](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)13 This is the figure that Anderson used in various public talks in 2018. In 2019 he confirmed a range of 10–15 per cent per year, inpersonal correspondence.View all notesIf we accept that Annex 1 nations need to achieve emissions reductions of 12 per cent per year, and if we assume that GDP growth in Annex 1 nations continues at 1.86 per cent per year (the average from 2010 to 2014), then decoupling must occur at a rate of 15.8 per cent per year.[14](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)14 Using the equation: Rate of necessary decoupling = GDP growth rate/(1 – Rate of necessary emissions reductions).View all notes For perspective, this is eight times faster than the historic rate of decoupling in Annex 1 nations (viz., 1.9 per cent per year from 1970 to 2013), and it is important to bear in mind that the rate of decoupling has generally slowed over this period.[15](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)15 Decoupling slowed from an average of 2.3 per cent per year in the first half of the period to an average of 1.6 per cent in the second half, according to the World Bank, Databank, CO2 emissions (kg per 2010 US$ GDP).

#### Only degrowth can solve warming – past efforts prove emissions won’t ‘peak’

**Schor and Jorgenson ‘19**, - Schor is Professor of Sociology at Boston College, the author of *Plenitude: The New Economics of True Wealth*, and recipient of the 2014 Award for Public Understanding of Sociology. Jorgenson is Professor and Chair in the Department of Sociology and Professor of Environmental Studies at Boston College, who primarily researches the human dimensions of global environmental change, with a focus on the drivers of greenhouse gas emissions, industrial pollution and land cover change. He was the 2016-2017 chair of the Environmental Sociology Section of the American Sociological Association, and a member of the American Sociological Association’s Task Force on Sociology and Global Climate Change, which concluded in 2016. He currently serves as the 2018-2019 chair of the Sociology of Development Section of the American Sociological Association, a Scholars Strategy Network affiliate, and an at large officer for the Society or Human Ecology. He is the founding co-editor of Sociology of Development, a journal published by University of California Press, and he serves on the editorial board for various disciplinary and interdisciplinary journals. (Juliet B. and Andrew K., "Is it Too Late for Growth?" Review of Radical Political Economics, Vol. 51(2) pages 320–329, 5-14-2019) //AL

Thus, the question we ask is: what are the goals of economic and climate policy and what level of GDP growth is compatible with them? Unfortunately, the answer to that question is “brutal” (Anderson 2012). In the Global North, we should have reached peak emissions some years ago, but have not. Given the current political environment, it is likely that feasible GDP growth is at zero or below.  Does this conclusion apply to all countries or just the wealthy nations of the Global North? While Global South countries must achieve massive emissions reductions, the degrowth paradigm is explicitly directed at the rich. (We therefore find Pollin’s characterization of degrowth as nationally generic somewhat surprising, especially because the sources he cites are all clear on this. Indeed, as early as 1992, Schor argued for shorter working hours in the North for the express purpose of opening up more “ecological space” for growth in the Global South.) Furthermore, as academics from a wealthy country, we find it problematic to advocate for degrowth in the Global South.  The argument against degrowth assumes that absolute decoupling of emissions from GDP is possible. But despite economists’ optimism, almost no countries have achieved absolute decoupling, particularly once trade-related emissions are accounted for (Knight and Schor 2014; Cohen et al. 2017). Indeed, it is the uptick in GDP growth, both globally and in wealthy countries, which is largely responsible for the recent surge of emissions. We have addressed this issue in multiple studies.  An extensive treatment of decoupling is Jorgenson and Clark (2012), who use longitudinal modeling techniques and statistical interactions between GDP per capita and time to study three nationallevel territorial carbon emissions measures—total emissions, per capita emissions, and emissions per unit of GDP from 1960 to 2005 (see also Jorgenson 2014; Longhofer and Jorgenson 2017). Their results indicate a strong relationship between per capita emissions and GDP per capita in developed nations that is stable through time. For developing countries the association between emissions and GDP per capita actually increased over time, the opposite of decoupling, although it is smaller than in developed countries. For total emissions, the estimated effect of GDP per capita decreased in magnitude over time in developed countries, providing some evidence of a relative decoupling for such nations, while for developing countries the results indicate a stable effect of GDP per capita on total emissions through time. The analysis of emissions per unit of GDP suggest a slight relative decoupling for the sample of developed nations, while the findings for the sample of developing countries are inconclusive. In a more recent longitudinal study that extends the analysis to 2010, Thombs (2018b) replicates the findings of Jorgenson and Clark (2012) across all three measures of territorial emissions. This body of work provides some evidence of relative decoupling, but not the absolute decoupling required to achieve emissions targets.  Once embodied emissions in trade and cyclical variations are accounted for, the picture is even more pessimistic. Knight and Schor (2014) find no decoupling using consumption (i.e. trade adjusted) rather than territorial carbon emissions. Cohen et al. (2017), using data from 1990–2012 and accounting for business cycle effects and trade, find that almost no countries (with Germany as a notable exception) have been able to decouple GHGs from GDP over time. The United States, notably, has not, and is estimated to have a long-term GHG elasticity of 0.6. It is important not to conclude too much from the substantial post-2005 decline in official US emissions, as those measures exclude trade-embodied emissions and the rapid increase in methane associated with hydraulic fracturing. Furthermore, a majority (52 percent) of the decline between 2007 and 2011 was due to the impact of the Great Recession (Council of Economic Advisers 2013: 194–6).  As climate scientists grow more pessimistic about the ability to reach emissions targets while continuing to expand output in already wealthy economies, we believe economists must also acknowledge this reality (Anderson 2012). Kevin Anderson and Alice Bows have chided their fellow climatologists for allowing economists to lead them into the “misguided belief that commitments to avoid warming of 2°C can still be realized with incremental adjustments to economic incentives,” by which they mean continued economic growth. They continue: “Put bluntly, climate change commitments are incompatible with short- to medium-term economic growth (in other words, for 10 to 20 years).” They note that the optimistic low-carbon scenarios rely on increasingly implausible assumptions, including negative emissions.  Anderson and Bows rightly focus not on the ideal world of models, but the one we actually live in. As observers have noted throughout nearly three decades of IPCC reports, emissions trajectories and climate outcomes have consistently been on the high end (or even beyond) what the relatively conservative consensus process has predicted. As a group of prominent climate scientists wrote in Nature: “We show that CO2 emissions track the high end of the latest generation of emissions scenarios, due to lower than anticipated carbon intensity improvements of emerging economies and higher global gross domestic product growth” (Friedlingstein et al. 2014 In the Global North, it’s time to meet our climate responsibility by using means other than growth to meet economic and social needs.

#### Climate targets are not compatible with growth – squo proves we can’t come close to annual reductions required for staying within 2° C

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Carbon emissions in some EU (European Union) countries have been declining, even after trade is taken into account, suggesting some substitution of fossil fuels by cleaner energies. [Although recession also played a role (34).] These declines are nowhere near the 8–10%, year-after-year reductions in carbon emissions required for developed nations under scenarios compatible with a 50% chance of limiting warming to 2°C (48). Further reductions will be harder to sustain once one-off substitutions of oil or coal with natural gas are exhausted (34). Resource use or carbon emissions are a product of the scale of the economy (GDP) times its resource or carbon intensity (kg/GDP or kgCO2/GDP). With 1.5% annual increase in global income per capita, carbon intensity has to decline 4.4% each year for staying within 2°C; with 0% growth, carbon intensity has to fall 2.9% each year (49). In the period 1970–2013, the average annual reduction rate for carbon intensity was less than 1.5%—and this gets harder to sustain as the share of carbon-intensive economies in global output increases (49). As Jackson (50) showed in his seminal work, it is practically impossible to envisage viable climate mitigation scenarios that involve growth. This calls for research on managing, or prospering, without growth (50, 51).Some scenarios deem possible meeting climate targets while sustaining growth, but these generally assume after 2050 some sort of “negative emissions technology,” geo-engineering or otherwise. According to a recent Nature editorial, these technologies remain currently “magical thinking” (52). Clean energy investments can stimulate the economy in the short run, but in the long run growth may be limited by their low EROIs. Studies suggest that economic growth requires a minimum EROI of close to 11:1 (53). Less EROI means less labor productivity, and hence less growth. Indeed, “Limits to Growth” scenarios do not predict growth ending when resources are exhausted but, rather, when the quality of resources declines to such an extent that further extraction diverts more and more investment away from productive industry (44).

#### Paris failed – degrowth is key

**Schor and Jorgenson ‘19**, - Schor is Professor of Sociology at Boston College, the author of *Plenitude: The New Economics of True Wealth*, and recipient of the 2014 Award for Public Understanding of Sociology. Jorgenson is Professor and Chair in the Department of Sociology and Professor of Environmental Studies at Boston College, who primarily researches the human dimensions of global environmental change, with a focus on the drivers of greenhouse gas emissions, industrial pollution and land cover change. He was the 2016-2017 chair of the Environmental Sociology Section of the American Sociological Association, and a member of the American Sociological Association’s Task Force on Sociology and Global Climate Change, which concluded in 2016. He currently serves as the 2018-2019 chair of the Sociology of Development Section of the American Sociological Association, a Scholars Strategy Network affiliate, and an at large officer for the Society or Human Ecology. He is the founding co-editor of Sociology of Development, a journal published by University of California Press, and he serves on the editorial board for various disciplinary and interdisciplinary journals. (Juliet B. and Andrew K., "Is it Too Late for Growth?" Review of Radical Political Economics, Vol. 51(2) pages 320–329, 5-14-2019) //AL

Climate social science is dealing with a fast-moving target. Recent data on temperatures, sea-level rise, extreme weather events, and migration suggest that climate destabilization is accelerating. Globally the last four years have been the hottest on record, with a rapid escalation of temperatures, and the first half of 2018 suggests it will be the fourth hottest (Climate Central 2018). In 2018 average daily temperatures in the Arctic registered up to 20°C higher than normal, and up to 35°C higher in Siberia, which has led some climate scientists to reconsider even their most pessimistic scenarios (Watts 2018). Irreversible, catastrophic climate derangement is a real possibility.  Despite these grim developments, and the good intentions of the Paris Agreement, anthropogenic carbon emissions have continued their upward trajectory. From 2014 to 2016, global emissions were almost flat. But as global GDP growth picked up to over 3 percent in 2017, emissions grew by 1.4 percent, reaching their highest ever level (International Energy Agency 2018). Atmospheric concentration of carbon dioxide is still increasing, reaching 412 ppm in May of 2018, and continuing a five-year steady upward trend (CO2.Earth 2018). While renewables increased by more than 6 percent in 2017 (International Energy Agency 2018), they still represent a small fraction of total energy production. Furthermore, cross-national research suggests that so far, renewable energy has only minimally displaced fossil-fuel energy (York 2012, Thombs 2018a). The 2017 rise in carbon emissions dealt a severe blow to hopes that they had finally peaked. Reaching peak emissions soon is crucial to all scenarios for controlling climate destabilization. A distinguished group of climate scientists recently concluded that “without a rapid and clear break in the historical trends of IFF [the carbon intensity of the world economy] or GDP the opportunity to follow cost-effective 2° mitigation pathways in the near-term… has passed” (Friedlingstein et al. 2014). There is increasing scientific consensus that the 2° target, which has been a political, rather than a scientific choice, is not safe. A decade ago, Hansen et al. (2008) warned that tipping points leading to irreversible, out-of-control climatic change are a danger above 350 ppm, which represents a warming target of 1°C. Now, the more conservative IPCC process has moved in this direction, with its 2018 report on differences between 1.5°C and 2°C, which clearly indicates the dangers of the higher target. An early leaked draft called for “rapid and far-reaching changes” and concluded that there was a high probability that the 1.5°C target is beyond our capabilities, although a later version appears to have softened the latter claim (Doyle 2018). Carbon budgets represent another way to think about the problem. Introduced in the 5th Assessment Report of the IPCC in 2014, the carbon budget is a measure of how much carbonbased energy is available to be burned for a given temperature target. There is debate about how large the carbon budget currently is, and by extension the number of years we can continue to use fossil fuels and still stay within various temperature limits. A recent influential study by Millar et al. (2017) finds that for a 66 percent chance of remaining, within 1.5°C, we have twenty years of fossil fuel use remaining while the Mercator Institute (directed by Ottmar Edenhofer, co-chair of IPCC Working Group III on Mitigation) has estimated that we may have already used up the entire budget for a 1.5°C rise (<https://www.mcc-berlin.net/en/research/co2-budget.html>).

#### CO2 emissions are increasing

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On a global level, CO2 emissions have increased steadily, falling only during periods of economic recession ([Figure 4(b)](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964#F0004)). Global emissions did level off in 2015 and 2016 while GDP continued to rise, prompting the International Energy Agency, a research arm of the OECD, to announce ‘Decoupling of global emissions and economic growth confirmed’ (IEA [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)International Energy Agency, October 2016. Decoupling of global emissions and economic growth confirmed.<https://www.iea.org/newsroom/news/2016/march/decoupling-of-global-emissions-and-economic-growth-confirmed.html> [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=International+Energy+Agency%2C+October+2016.+Decoupling+of+global+emissions+and+economic+growth+confirmed.+https%3A%2F%2Fwww.iea.org%2Fnewsroom%2Fnews%2F2016%2Fmarch%2Fdecoupling-of-global-emissions-and-economic-growth-confirmed.html)), while media outlets celebrated ‘peak emissions’ (Meyer [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Meyer, R. April 2016. Not doomed yet: the biggest political-economy news this millennium. The Atlantic. Available from:<http://www.theatlantic.com.proxy.lib.umich.edu/science/archive/2016/04/flat-emissions-economy-growth/>. [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar?hl=en&q=Meyer%2C+R.+April+2016.+Not+doomed+yet%3A+the+biggest+political-economy+news+this+millennium.+The+Atlantic.+Available+from%3A+http%3A%2F%2Fwww.theatlantic.com%2Fscience%2Farchive%2F2016%2F04%2Fflat-emissions-economy-growth%2F.)). This news briefly came to constitute a key element of optimistic green growth narratives, until global emissions began to rise again in 2017 (1.6 per cent) and 2018 (2.7 per cent). Analysts attribute the temporary plateau to a shift in China away from coal and (mostly) toward oil and gas, and a shift in the US to natural gas.[5](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)5 Even while CO2 emissions had plateaued, methane emissions were growing, by more than 30 per cent between 2002 and 2014 (Turner et al. [2016](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)Turner, A.J., et al., 2016. A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations. Geophysical research letters, 43 (5), 2218–2224.[[Crossref]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0065&dbid=16&doi=10.1080%2F13563467.2019.1598964&key=10.1002%2F2016GL067987), [[Web of Science ®]](https://www-tandfonline-com.proxy.lib.umich.edu/servlet/linkout?suffix=CIT0065&dbid=128&doi=10.1080%2F13563467.2019.1598964&key=000373109800053), , [[Google Scholar]](http://scholar.google.com.proxy.lib.umich.edu/scholar_lookup?hl=en&publication_year=2016&pages=2218-2224&issue=5&author=A.J.+Turner&title=A+large+increase+in+U.S.+methane+emissions+over+the+past+decade+inferred+from+satellite+data+and+surface+observations)).View all notes Once these shifts were complete, continued economic growth drove emissions up again. Overall, global carbon productivity has been slowing. World Bank data shows that carbon productivity (CO2 per 2010 $US GDP) improved steadily from 1960 to 2000, with decarbonisation happening at an average rate of 1.28 per cent per year (relative decoupling). However, from 2000 to 2014 there was no improvement in carbon productivity – in other words, not even relative decoupling has been achieved in the twenty-first century.[6](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)6 The trend looks somewhat more promising if we use PPP dollars instead of constant USD, but PPP calculations are unreliable and tend to overstate the purchasing power of poor countries.View all notes High-income nations have done better, at least in terms of territorial emissions (the World Bank does not track consumption-based emissions), but even so progress has slowed, from an average rate of 1.91 per cent per year from 1970 to 2000, down to 1.61 per cent per year from 2000 to 2014. Existing trends are incompatible with the Paris Agreement targets. Business-as-usual is set to lead to 4.2°C of warming (2.5°C to 5.5°C) by 2100. Even with the Nationally Determined Contributions and Intended Nationally Determined Contributions under the Paris Agreement, global warming is still projected to reach 3.3°C (1.9°C to 4.4°C) – an improvement over the BAU scenario but still far exceeding the 1.5°C and 2°C thresholds.[7](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/13563467.2019.1598964)7 ‘In order to keep warming below these thresholds, the world will have to make much more aggressive emissions reductions.

### 2NC --- AT Decoupling --- It’s Impossible

#### Absolute decoupling is impossible – resource productivity encourages growth and alternative energy sources have adverse environmental consequences

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Although driven by political, institutional, and discursive processes, growth is also biophysical. The economic process converts energy, resources, and matter to goods, services, and waste (34). In theory, it seems possible to decouple material throughput from economic output by improving the resource efficiency of production. Ecological economists, however, argue that in practice absolute decoupling is unlikely, even though relative decoupling is common (34). Efficiency should not be confused with scale (35): The more efficiently we use resources, the lower they cost, and the more of them we end up using (36). This is, in essence, growth. Just as increases in labor productivity lead to growth and new jobs, not to less employment, increases in resource productivity increase output and resource use (37). Capitalist economies grow by using more resources and more people, more intensively. Accelerating this is unlikely to spare resources. Growth can become “cleaner” or “greener” by substituting, for example, fossil fuels with solar power, or scarce, environmentally intensive metals with more abundant and less intensive metals. But new substitutes have resource requirements, and life-cycle impacts that cross space and time. Energy is a vital source of useful work (38); growth has been possible because fossil fuels did things human labor alone could not do. Ending the use of fossil fuels is likely to reduce labor productivity and limit output (34). Solar and wind power are constrained only by their rate of flow, but unlike fossil fuels, they are diffuse—more like rain than a lake (3). To collect and concentrate a diffuse flow of energy, more energy is necessary and more land is required. The EROIs (energy returns on energy investment) of renewable energies are between 10:1 and 20:1, compared to more than 50:1 for earlier deposits of oil and coal (39). An economy powered by a diffuse energy flow is then likely to be an economy of lower net energy and lower output than one powered by concentrated stocks (3). Land use for solar or wind also competes with the use of land for food production, and rare materials are necessary for infrastructures and batteries that store their intermittent flows, with significant environmental effects.

#### Empirics prove decoupling is unrealistic– GDP and material use increase proportionally

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Historical data corroborate ecological economic theory (40). Ayres & Warr (38) find that the use of net energy after conversion losses explains a big portion of the United States’ total factor productivity and economic growth. At the global level, GDP and material use have increased approximately 1:1. Carbon emissions have increased somewhat slower than GDP, but still have increased (34). This is unlikely to be a coincidence. Exceptions may exist, but cross-panel data analysis shows that overall, 1% growth of a national economy is associated with 0.6% to 0.8% increase in its carbon emissions (41) and 0.8% growth in its resource use (42). Global resource use follows currently the “collapse by 2050” scenario foreseen in the “Limits to Growth” 1971 report (43–45). Domestic material use in some developed OECD economies has reached a plateau, but this is because of globalization and trade. If we take into account imported goods, then the material requirements of products and services consumed in OECD countries have grown hand in hand with GDP, with no decoupling (46). For water use, the effects of growth overwhelm any realistic savings from technologies and efficiency (47); water footprints have increased even in regions such as California where water withdrawals were stabilized (40).

### 2NC --- AT Tech Solves --- No Tech

#### No tech – math, politics, rebound effect

**Wiseman 17** (John, Deputy Director of the Melbourne Sustainable Society Institute, University of Melbourne and Professorial Fellow, Melbourne School of Global and Population Health. He is also a Fellow at the Centre for Policy Development, and Samuel Alexander, research fellow with the Melbourne Sustainable Society Institute and lecturer with the Office for Environmental Programs, University of Melbourne, Australia, *Transitioning to a Post-Carbon Society Degrowth, Austerity and Wellbeing*, “The Degrowth Imperative: Reducing Energy and Resource Consumption as an Essential Component in Achieving Carbon Budget Targets”, 2017, 87-104)

The second debatable assumption is that technological innovation will necessarily and rapidly translate into global reductions in energy consumption. Important questions remain about the speed with which 100% renewable energy can realistically be achieved (see e.g. Smil 2010, 2014); the extent of fossil fuel energy consumption required to drive the initial massive expansion in renewable energy infrastructure; and the full life cycle energy return on investment (EROI) outcomes of solar and wind energy—particularly if these calculations factor in the full costs of energy storage (see e.g. Palmer 2013; Prieto and Hall 2013). Noting that emissions reductions of 4% p.a. in an economy growing at 2% p.a. are likely to require carbon intensity improvements of around 6% p.a., Anderson (2013) notes that **he has yet to find any credible mainstream economist** prepared to argue that prolonged emissions reductions of 3% or 4% or more are compatible with economic growth.

Indeed, as Lord Stern (2006: 231) himself has noted: There is likely to be a maximum practical rate at which global emissions can be reduced. At the national level, there are examples of sustained emissions cuts of up to 1% per year associated with structural change in energy systems... whilst maintaining strong economic growth. However, cuts in emissions greater than this have historically been associated only with economic **recession** or upheaval, for example, the emissions reduction of 5.2% per year for a decade associated with the economic transition and strong reduction in output in the former Soviet Union. These magnitudes of cuts suggest it is likely to be very challenging to reduce emissions by more than a few percent per year while maintaining strong economic growth.

The third reason for caution in assuming overly optimistic relationships between technological innovation, carbon intensity and emissions reductions is the impact of the “rebound effect” (see Jevons 1865; Herring and Sorrell 2009; Holm and Englund 2009; Jackson 2009). This phenomenon refers to the tendency for innovation and efficiency gains to be rapidly overwhelmed as cheaper unit costs combined with the formidable reach and power of the global advertising industry enable and encourage individuals to consume more of the same or alternative services and products. The harsh reality remains that global emissions continue to grow (IPCC 2013)—along with the global trends in the consumption of energy and resources—with apparent improvements in developed economy energy efficiency often masking the reality of energy intensive production being offshored to developing economies. The likelihood of full and fast deployment of new technologies is the fourth problematic assumption that needs to be addressed given the formidable political and social obstacles standing in the way of rapid implementation. As noted in the recent Post Carbon Pathways review of learning from the implementation of large-scale decarbonization strategies (see Wiseman et al. 2013), experienced climate scientists and policymakers consistently come to the conclusion that the key obstacles standing in the way of rapid decarbonization are political and social rather than technological. Key roadblocks include the following. 1. **Climate scepticism** and denial of the necessity and urgency of action. 2. The power and influence **of vested interests** in the fossil fuel, finance and media industries. 3. Extreme individualist and neo-liberal values and ideologies. 4. Inequitable distribution of emission reduction costs and responsibilities. 5. Technological, social and economic **path dependencies**. 6. Financial and governance **constraints**.

### 2NC --- AT Tech Solves --- No Innovation

#### Corporations co-opt innovation

**Smith 5.** Richard, *The Engine of Eco Collapse*, Capitalism, Nature, Socialism Vol 16 Iss 4, Proquest

In the last part of the book, Diamond turns to our current crisis and lists a dozen critical environmental problems that, he says, will doom our own society unless we solve them. We all know what these problems are: global warming, fossil fuel consumption, natural habitat destruction, species extinction, fresh water consumption, industrial pollution, etc. And we also all know, at least in broad terms, what we must do to solve these problems: urgently wean ourselves off fossil fuels, stop deforestation, find alternative energy sources, stop overfishing and hunting species to extinction, stop dumping toxics in the environment, and so on. So if we all know what needs to be done and have the advantage of hindsight, w**hy aren't we doing it?** Why aren't we "choosing to succeed?" The short answer is that under capitalism, the choices we need to make are not up to "society," while the ruling classes are incapable of making sustainable choices. In Chapter 9, Diamond relates some success stories-mostly those of small Pacific Island societies-where economic and environmental decisions were up to "society." Unlike Easter Island or Mayan society, these were small tribal village democracies where there were no distinctions of rank or class and no elite/mass conflict. Diamond's favorite example is the highland society of New Guinea. Over thousands of years they built a mini-Switzerland of interrelated villages, terraced farms and tree plantations. The society was, and still is today, chiefless. Within each village diere are just individuals and so-called "big-men" with no special privileges, who by force of personality, intelligence and experience were more influential than other individuals but still lived in a hut and tilled a garden like everyone else's. "Decisions were (and often still are today) reached by means of everybody in the village sitting down together and talking, and talking, and talking. The big-men couldn't give orders, and they might or might not succeed in persuading others to adopt their proposals." Diamond remarks that "To outsiders today (including not just me but often New Guinea government officials themselves), that bottom-up approach to decision-making can be frustrating, because you can't get a quick answer to your request; you have to have the patience to endure talk-talk-talk for hours or days with every villager who has some opinion to offer." (pp. 284-85). But it works. By getting everyone's input and approval, New Guinea societies successfully ensured consensus, rationally managed their economy, society, and environment-and survived sustainably for more than 40,000 years. **But ours is not a "bottom-up" democratic society.** In our capitalist society, ownership and control of the economy are largely in the hands of private corporations who pursue their own ends and don't answer to society. And that's the problem. So it seems curious, even perverse, that when Diamond turns to address our contemporary environmental crisis, he inexplicably forgets his own lesson and presents no comparable exploration of contradictory (class) interests and (class) conflict in modern capitalist society. This is unfortunate because Diamond's reluctance to discard his own pro-market "core values" prevents him from applying the same critical analysis to our own society that he so effectively deploys to analyze pre-modern societies. The fact that he fails to do so makes his book weakest in its concluding "What-do-we-do-now?" chapters on big business and the environment. For after stressing the need for urgent radical change to avert collapse, Diamond then ignores the systemic problems of capitalism that stand in the way of that needed radical change and instead, falls back on the standard tried-and-failed strategy of lobbying, consumer boycotts, eco labeling, green marketing, asking corporations to adopt benign "best practices," and so on-the stock-in-trade strategy of the environmental lobbying industry that has proven so impotent to date against the global capitalist juggernaut of eco-destruction. Of course this is not at all to demean reforms. Lots of problems can be and have been significantly ameliorated and even solved without overturning the economic system. **But despite significant victories here and there**, the big problems-global warming, deforestation, overfishing, pollution, resource exhaustion, species extinction, and environmentally caused human health problems-are not getting better. They are getting worse. And they are getting worse because **environmental reforms are always and everywhere subordinated to profit and growth.**

### 2NC --- AT Solves War --- Co-op

#### Economic decline increases cooperation.

Christina L. **Davis &** Krzysztof J. **Pelc 17**, Christina L. Davis is a Professor of Politics and International Affairs at Princeton; Krzysztof J. Pelc is an Associate Professor of Political Science at McGill University, “Cooperation in Hard Times: Self-restraint of Trade Protection,” Journal of Conflict Resolution, 61(2): 398-429

Conclusion Political economy theory would lead us to expect rising trade protection during hard times. Yet **empirical evidence** on this count has been mixed. Some studies find a correlation between poor macroeconomic conditions and protection, but the worst recession since the Great Depression has generated surprisingly moderate levels of protection. We explain this apparent contradiction. Our statistical findings show that under conditions of pervasive economic crisis at the international level, states exercise more **restraint** than they would when facing crisis alone. These results throw light on behavior not only during the crisis, but throughout the WTO period, from 1995 to the present. One concern may be that the restraint we observe during widespread crises is actually the result of a decrease in aggregate demand and that domestic pressure for import relief is lessened by the decline of world trade. By **controlling** for **product-level imports**, we show that the restraint on remedy use is not a byproduct of declining imports. We **also** take into account the ability of some countries to **manipulate their currency** and demonstrate that the relationship between crisis and trade protection **holds** independent of exchange rate policies. Government decisions to impose costs on their trade partners by taking advantage of their legal right to use flexibility measures are driven not only by the domestic situation but also by circumstances abroad. This can give rise to an individual **incentive for strategic self-restraint** toward trade partners in similar economic trouble. Under conditions of widespread crisis, government leaders **fear** the **repercussions** that their own use of trade protection may have on the behavior of trade partners at a time when they cannot afford the economic cost of a trade war. Institutions provide **monitoring** and a venue for **leader interaction** that **facilitates coordination** among states. Here the key function is to reinforce expectations that any move to protect industries will trigger similar moves in other countries. Such coordination often draws on shared historical analogies, such as the Smoot–Hawley lesson, which form a focal point to shape beliefs about appropriate state behavior. Much of the literature has focused on the more visible action of legal enforcement through dispute settlement, but this only captures part of the story. Our research suggests that tools of informal governance such as leader pledges, guidance from the Director General, trade policy reviews, and plenary meetings **play a real role** within the trade regime. In the absence of sufficiently stringent rules over flexibility measures, compliance alone is insufficient during a global economic crisis. These **circumstances** trigger **informal mechanisms** that complement legal rules to **support cooperation**. During widespread crisis, legal enforcement would be inadequate, and informal governance helps to bolster the system. Informal coordination is by nature difficult to observe, and we are unable to directly measure this process. Instead, we examine the variation in responses across crises of varying severity, within the context of the same formal setting of the WTO. Yet by focusing on discretionary tools of protection—trade remedies and tariff hikes within the bound rate—we can offer conclusions about how systemic crises shape country restraint independent of formal institutional constraints. Insofar as institutions are generating such restraint, we offer that it is by facilitating informal coordination, since all these instruments of trade protection fall within the letter of the law. Future research should explore trade policy at the micro level to identify which pathway is the most important for coordination. Research at a more macro-historical scope could compare how countries respond to crises under fundamentally different institutional contexts. In sum, the determinants of protection include economic downturns not only at home but also abroad. Rather than reinforcing pressure for protection, pervasive crisis in the global economy is shown to generate countervailing pressure for restraint in response to domestic crisis. In some cases, **hard times bring more, not less, international cooperation**.

### 2NC --- AT Solves War --- Interdependence Turn

#### Interdependence increases the likelihood of conflict.

**Spaniel and Malone** 3/5/**19** [William Spaniel, Department of Political Science, University of Pittsburgh. Iris Malone, Department of Political Science, Stanford. The Uncertainty Tradeoff: Re-Examining Opportunity Costs and War. March 5, 2019. <https://wjspaniel.files.wordpress.com/2019/03/uncertainty-tradeoff-final.pdf>]

This paper’s main contribution is to identify the precise conditions under which the **probability of war** **increases** despite rising **opportunity costs**. We show that, unlike other mechanisms, **rising opportunity costs** may **counter-intuitively** make **war more likely** because it also increases the **difference** between **reservation points** for unresolved versus resolved opponents. As a result, these **info**rmational **asymmetries** can lead states to screen their opponents and **risk war**. This new finding reshapes our understanding about the relationship between **opportunity costs** and **war**. It introduces a more nu-anced mechanism about when and how this relationship operates, sometimes **contrary to expectations**.

Our work advances economic interdependence theories of war in several ways. First, it provides new insight on the causes of war at odds with traditional cases where opportunity costs increased, yet conflict still erupted. Second, it demonstrates how and when competing effects of economic instruments predominate, driving changes in the probability of conflict. In contrast to previous work, we identify specific conditions under which increasing opportunity costs shifts the probability of conflict, consistent with the empirical evidence. Finally, it demonstrates the important, but subtle, effects of changing instruments, like trade flows, in the presence of uncertainty. The model advances a growing line of research that various sources of uncertainty have disparate effects on crisis bargaining.

This paper has more general implications for trade-conflict research. It complements growing calls to **disaggregate** the **effects** of instruments like **trade** (Martin et al. 2008). Empirical analyses must carefully trace what precisely parties do not know about each other to draw the correct inference. It also suggests states should be careful in interpreting how other states value or benefit from mutual trade flows. A **free trade agreement** championed by one state may be **perceived** as relatively **less beneficial** in **another state**. This **uncertainty** may **undermine** the **credibility to abide** by the agreement in the **long-run**.

We also highlight the need for future research to consider screening incentives in trade deals themselves. Although the proposer benefits from greater trade—both from the direct economic benefit and indirect ability to steal more surplus from the receiver— trade can **harm unresolved receivers** and **incentivize screening**. This could generate some constraints in the deals a state is willing to sign, in fear that the rearranged incentives under uncertainty could hurt its ability to effectively bluff later. A more unified approach to trade and crisis negotiations would yield additional interesting insights.

Moving forward, the results speak to other lines of research in international relations theory predicated on changing costs of conflict. We couched our results in the interdependence literature due its clear application. However, the comparative static speaks to cases where the receiver’s costs increase more generally.23 Framed this way, the results have clear implications for other literatures. For example, standard **nuclear deterrence** theory argues that possessing **nuclear weapons** **increases** the **costs of war** for potential challengers due to the risk of a retaliatory nuclear response (Morgenthau 1961, 280; Gilpin 1983, 213-219). The logic of alliance formation similarly relics on the assumption that entering these pacts induces peace by raising an opponent’s costs of conflict (Morrow 1994). **Together**, these mechanisms **assume raising** the **costs of war** should **decrease conflict**. Our results demonstrate this effect is likely **more conditional** than previously realized. We find **increased costs** of **conflict** can **exacerbate issues** with **uncertainty** over resolve **even if both states possess destructive weaponry**. This promises to shed new insights into how raising costs affects deterrence and coercive bargaining in other contexts.

### 2NC --- AT Solves Disease --- No Innovation

#### Innovation can’t solve – price, low market uptake, and lack of gov support destroy any incentive

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Pharmaceutical companies allocate research funds with the expectation of a return on investment. Company revenues are determined on a price/volume model: Higher volumes or higher prices (or both) yield higher revenues. Most profits are earned during the first years after introduction, especially with legal protection from generic entry. Particularly active areas currently include oncology and hepatitis C, with the introduction of new specialty drugs at very high prices. In contrast, the return on investment is relatively low for antibiotics as a result of low prices, limited market uptake, and modest government financial support. LOW PRICES Antibiotics were the original wonder drugs, but they have never been very expensive. In community settings, some US pharmacies offer generic antibiotics free (or nearly so) to drive traffic to their stores. In US hospitals, antibiotics are generally included within a bundled payment, giving hospitals strong financial incentives to limit the introduction of more expensive drugs unless clinically necessary. In both settings, new antibiotics compete against an array of low-cost generics that remain effective enough to suppress pricing for the vast majority of clinical applications. As a result, antibiotics accounted for 6.4 percent of all US prescriptions in 2013 but only 2.6 percent by value. 9MARKET UPTAKE IS LIMITED Over the past few years US antibiotic prescriptions per capita have declined compared to all prescription drugs (see Exhibit 1). US antibiotic sales peaked in 2005 (see Exhibit 2 ). Most recent antibiotics have been approved on the basis of noninferiority trials 10 and so do not come to market with demonstrated superiority in efficacy or safety. While there is some portfolio value in antibiotic diversity, a true breakout antibiotic product will need evidence of superiority for important unmet medical needs.A recent review of three decades of new molecular entity antibiotic approvals and withdrawals found that many antibiotics approved in the 1980s and 1990s had difficulty competing against already approved drugs. 11 Antibiotics suffered market withdrawals at three times the rate of other drugs. Causes for withdrawal varied, but little evidence supports resistance as a cause since drugs that remain on the market have similar resistance profiles. Interrelated causes included safety problems, lack of superior efficacy compared to existing treatments, and lack of market success.Furthermore, stewardship programs appropriately lead to limits on antibiotic market uptake. 12 Successful antibiotic education 13 and vaccination campaigns 14 have been partially responsible for the reduction in US antibiotic use and would also be expected to restrict the market for new antibiotics.Finally, the value of new antibiotics for resistant diseases is not solely for the patients who actually use the antibiotics. Rather, it is also for everyone in the broader population who does not develop resistant infections because of the well-targeted use of new antibiotics. That public health value is not captured in the willingness to pay on the part of a specific patient or his or her health plan and thus in pricing models.GOVERNMENT FINANCIAL SUPPORT IS NOT GROWING The principal US government financial support for antibiotic research and development is through the National Institutes of Health (NIH) and the Biomedical Advanced Research and Development Authority (BARDA). While the NIH does not publicly categorize spending separately for bacterial resistance, overall spending on antimicrobial resistance is flat in real terms, reflecting secular trends in NIH funding (see Exhibit 3 ). BARDA funding has been important but faces similar challenges, even as the program has become more central to advancing antibiotic development. Funding in Europe has been modest in recent years. 15 Additional government research funding is provided by the Orphan Drug Act of 1983, which supports many drug research and development programs, but it does not appear to be a good fit for antibiotics. While 464 drugs and biologics with orphan drug designations had reached the market as of October 2014, only ten treated bacterial disease, and none of those targeted disease attributable to resistant pathogens identified in the CDC threat assessment (see online Appendix Exhibit A). 16 Of the sixty-seven new molecular entity antibiotics approved by the Food and Drug Administration (FDA) since 1980, only one initially entered the market with orphan drug designation: bedaquiline for multidrug-resistant tuberculosis.Antibiotics face special difficulties in meeting the criterion for orphan drugs—diseases or disorders affecting fewer than 200,000 US residents. 17 The number of US patients currently hospitalized with pathogens such as carbapenem-resistant Enterobacteriaceae falls below the numerical threshold for orphan drug designation. However, lack of diagnostics and empirical administration of study drugs means that most clinical studies cannot focus solely on patients with resistant diseases but rather enroll broader groups of patients. In clinical practice, the lack of rapid diagnostics for many infectious diseases results in empirical prescribing outside the target population, which does not occur in many other orphan diseases such as inborn metabolic diseases. Furthermore, even if antibiotics for resistant diseases could be targeted effectively with better diagnostics, that would likely exacerbate the revenue challenges by reducing the market potential for new antibiotics even more than at present. COMPANIES DO NOT REGARD ANTIBIOTICS AS PROFITABLE For all of these reasons, companies find that the return on investment is relatively low for antibiotics. 18 In a recent analysis for the Department of Health and Human Services (HHS), the Eastern Research Group found expected net present values for several categories of antibiotic research to be remarkably low and in some cases negative. In no case did net present values exceed a target benchmark of $100 million, because of the factors mentioned above, including low prices and slow market uptake. 19 From a commercial standpoint, drug companies might not risk expending capital over the product development cycle if the expected returns from antibiotics are so low but instead may shift funds to other drug categories with higher earning potential. These low antibiotic valuations stand in sharp contrast to the social value of antibiotics and willingness-to-pay estimates, which are much higher. 19

#### We’re on the brink – drug-resistant bacteria kill 23,000 annually – that number is only going to grow

**Luepke et al ‘17**, - medical consultant at Medical Affairs Strategic Solutions in Atlanta Georgia (Katherine H. Luepke, Katie J. Suda, Helen Boucher, Rene L. Russo, Michael W. Bonney, Timothy D. Hunt, and John F. Mohr, "Past, Present, and Future of Antibacterial Economics: Increasing Bacterial Resistance, Limited Antibiotic Pipeline, and Societal Implications" Pharmacotherapy, Volume37, Issue 1, January 2017, Pages 71-84) //AL

A world without antibiotics is difficult to envision. Less than a century ago, patients were dying from infectious diseases that are treatable today. In World War I, mortality due to combat wounds was 75% if surgical intervention was not undertaken within 8 hours.1 Bacterial illnesses, primarily pneumonia and tuberculosis, killed approximately 300,000 Americans in 1930 and accounted for 22% of total deaths.2 When antibiotics were introduced in the late 1930s, mortality secondary to pneumonia declined by approximately 30% and by 60–75% for severe infections (bacterial meningitis and endocarditis).3 It was during this time period that the “Golden Age” of antimicrobial discovery officially commenced.

**We are now,** however, **in the midst of a postantibiotic era**. The number of U.S. Food and Drug Administration (**FDA) approvals of systemic antibiotics has declined by 90%** during the past 30 years.4 In the United States, the Centers for Disease Control and Prevention (CDC) has conservatively estimated that 2 million patients a year have infections due to drug‐resistant bacteria, and **23,000 die annually as a result**.5 Antimicrobial resistance has a negative impact on morbidity, mortality, and economics, with estimated annual direct and indirect costs of $55 billion in the United States.6 If resistance continues on its present trajectory, 10 million deaths worldwide are predicted by 2050 (surpassing deaths from cancer) and could cost up to $100 trillion.7 Antimicrobial stewardship programs, rapid diagnostics, and other interventions can decrease antibiotic consumption and may slow this progression; however, newer approaches to managing infections such as development of novel antibiotics with activity against resistant pathogens, immunomodulators, vaccines, antivirulence agents, and other biologics will always be needed as bacteria will continue to evolve.

Although many large pharmaceutical companies have abandoned research and development in antibiotics due to scientific and regulatory hurdles, there are economic tradeoffs. Important advocacy is heightening awareness of the limited antibiotic pipeline, and the hope is that these worldwide efforts will reinvigorate antibiotic development, especially for infections due to drug‐resistant pathogens that are considered an unmet medical need. However, the balance between the development of new antibiotics and the price that the health care institution pays for that product should be approached with careful consideration. The purpose of this review is to provide a historical perspective on antibiotic development and commercialization and how this has contributed to the abandonment of antibiotic development by some companies. In addition, we review current and proposed solutions aimed at stimulating antibiotic development, including alternative economic models and approaches aimed at ensuring a robust antibiotic pipeline.

#### Economic disincentives kill drug innovation – new drugs are too expensive so companies make small improvements to existing drugs instead

**Krok ‘18**, - cites data from a study by Joshua Krieger, Danielle Li, Dimitris Papanikolaou at Northwestern University that examines incentives for drug innovation, (Roberta "Everyone Wants Pharmaceutical Breakthroughs. What Drives Drug Companies to Pursue Them?" Kellogg Insight, September 6, 2018, https://insight.kellogg.northwestern.edu/article/everyone-wants-pharmaceutical-breakthroughs-what-drives-drug-companies-to-pursue-them) //AL

Some researchers argue that pharmaceutical firms these days are often making minor changes to existing medications instead of delivering innovative drugs. And, given the potential life-saving and life-improving power of new drugs, such a trend would have clear consequences for society. “Breakthroughs are becoming less frequent,” Papanikolaou says. To measure what is happening in the industry, he and coauthors developed a method to quantify a medication’s level of novelty and applied it to a database of more than 64,000 drugs. They found that more innovative therapies had a lower chance of being approved by the U.S. Food and Drug Administration (FDA). On the other hand, those that did pass this hurdle tended to be more effective and lucrative than so-called “me too” drugs, which are variations on existing medications. Yet the researchers found that firms were eager to work on novel drugs—under the right financial circumstances. When pharmaceutical companies got a windfall, such as a sudden increase in profits, they were more likely to spend it on developing novel drugs than on incremental improvements. The reverse, of course, is also likely true, Papanikolaou says. Firms may be held back from pursuing innovative therapies because they lack the cash to turn their financially riskier ideas into reality. “These financial frictions may be limiting innovation,” says Papanikolaou, who collaborated with Joshua Krieger of Harvard Business School and Danielle Li of MIT Sloan School of Management on the research. If society wants to encourage more novel drugs, he says, one solution would be to increase the supply of capital to these firms. A Yardstick for Drug Innovation Papanikolaou and his coauthors tackled the issue by first considering how to define innovation. In the past, researchers often measured novelty by counting, say, the number of new drugs or patents a firm produced. But these methods didn’t capture whether the therapies were innovative or “me too” drugs.Instead, Papanikolaou and colleagues examined the chemical structures of individual drugs that were being developed. In general, molecules that are chemically similar tend to have similar functions. So to measure novelty, the researchers used recent advances in bioinformatics to compare each medication in a large drug database to every drug developed before it. The algorithm, which was developed by researchers at the University of California, Riverside, returned a score that captured the chemical similarity between each pair of drugs. The team then identified the maximum similarity score for that medication—that is, how similar it was to its closest “neighbor.” The lower the score, the more innovative the drug. The team found that from 1999 to 2014, the average novelty of drugs declined. This trend was partly due to the fact that the number of existing medications grew. But even when the researchers compared each drug only to those developed during the previous five years, the pattern persisted. Papanikolaou cautions that this doesn’t necessarily mean all areas of innovation are declining in the pharmaceutical industry. The researchers’ method of measuring novelty worked only on small-molecule drugs; more complex “biologic” drugs—consisting of molecules such as proteins or sugars—were excluded from the analysis. While these biologic medications occupy a small fraction of the marketplace, they are a major source of innovation, he says. A Failure or a Blockbuster? Next, the researchers investigated the risks and rewards of developing novel drugs. They found that, on average, an innovative drug was less likely to pass regulatory hurdles. A drug with a novelty score that was one standard deviation higher than another medication for the same disease produced around the same time had a 29 percent lower chance of FDA approval. “If you’re trying something that hasn’t been tried before, you’re more likely to fail,” Papanikolaou says.

### 2NC --- AT Solves Disease --- Antibiotics Fail

#### antibiotics don’t cover super-spreaders– and no incentive to innovate – companies seek low hanging fruit

**Simpkin et al ‘17**, - Department of Health Policy, London School of Economics and Political Science. (Victoria L Simpkin, Matthew J Renwick, Ruth Kelly & Elias Mossialos, "Incentivising innovation in antibiotic drug discovery and development: progress, challenges and next steps" Journal of Antibiotics, volume 70, pages 1087–1096, 11-1-2017) //AL

Antimicrobial resistance (AMR) is a global health crisis now. At the current rate of emergence and spread of AMR, annual loss of life is expected to reach 10 million deaths by 2050 with an estimated economic cost of $100 trillion.1 Effectively combating AMR requires a multifaceted approach that facilitates sustainable and equitable use of antimicrobials, thwarts the spread of infectious disease, preserves existing antimicrobial therapies and fosters innovation of new therapies and diagnostic tools. A critical component of the AMR solution is the development of truly novel antibiotic drugs to cover the diminishing effectiveness of existing antibiotics that are relied on every day for essential clinical care. However, due to a variety of inherent market failures, the present business model for antibiotics has not adequately responded to the growing demand for innovation.2, 3, 4 At first glance, it may seem that the antibiotic development pipeline has been substantially reinvigorated in response to the growing emergency. The Pew Trust estimates that as of March 2017, there are 39 antibiotics in Phases I to III of the development pipeline. However, further investigation reveals that the current antibiotic pipeline is not robust enough to address the current and projected clinical need.5, 6 First, the success rates of moving an antibiotic through the different clinical phases suggests that of the 39 drugs in development, only 13 (33%) will translate into a marketable product.7 Second, most new antibiotics do not have the novel mechanisms of action or novelty in chemical matter targeting well-validated targets, which are necessary to significantly ensure effectiveness against resistant pathogens.8 Many of the products in the pipeline are redevelopments or combinations of existing compounds. Third, many of these drugs do not target the highest priority antibiotic resistant pathogens. The Pew Trust analysis shows that only 31% of drugs in development would be active against an ESKAPE pathogen and 33% would be active against a US Centre for Disease Control urgent threat pathogen.6Scientific and clinical advancements in antibiotic development are inherently challenging, particularly relative to other therapeutic fields. Many large capital companies have exited the antibiotic space in favour of more profitable therapeutic ventures. Small- and medium-sized enterprises (SMEs) have attempted to fill this void but generally lack the capital and resources to undertake intensive and long-term research and development (R&D).9, 10 Consequently, the low hanging fruit of antibiotic development, such as compound redevelopments and combinations, has been tapped. This leaves behind the complex and expensive task of discovering and developing truly novel mechanisms of action that are effective against the most resistant pathogens.11 Some companies are choosing to focus development efforts on alternatives to antibiotics such as antibodies, probiotics, lysins and bacteriophages.

### 2NC --- AT Space Col --- Turn

#### Space col causes inter-colony wars and war with ETs---extinction.

Marko **Kovic 18**. Social scientist (PhD in political communication, University of Zurich), co-founder and CEO of the consulting firm ars cognitionis, co-founder and president of the thinktank ZIPAR, the Zurich Institute of Public Affairs Research. 06-12-18. “Political, moral, and security challenges of space colonization.” ZIPAR. https://zipar.org/discussion-paper/political-moral-security-challenges-space-colonization/

3.3 Extraterrestrial life The scientific understanding of the origins of humankind and of life on Earth thus far paints a clear picture: We are the “products” of biological evolution, just as all other life forms on Earth. Furthermore, we know that life **can come into existence** where there **was no life before**, through so-called abiogenetic mechanisms. These basic facts lead to a clear conclusion: It is **very improbable that life on Earth is a once-in-a-universe event**; it is **highly** probable that life **has come into existence elsewhere in the universe as well**. We do not know whether extraterrestrial life currently exists, and whether there is any extraterrestrial life in our vicinity (as far as we know, there is none in our Solar System). In theory, our galaxy might be **full** of life and even **highly intelligent and technologically advanced** life, but, as the famous Fermi paradox posits32, there is no trace of any extraterrestrial intelligence. Be that as it may, it is possible that there is extraterrestrial life beyond Earth, and it is possible that **we will come into contact with extraterrestrial life due to colonization activity**. What should our moral attitude towards extraterrestrial life look like? The moral issue of our attitudes towards extraterrestrial life can be divided into three classes of problems, according to the type of life we are dealing with: Primitive non-sentient life. Primitive sentient life. Non-primitive sentient life. Primitive non-sentient life are life forms that resemble microbial life forms on Earth, such as bacteria. Extraterrestrial microbial life can be of great instrumental value, specifically to humans, but also in a more general sense. That is a strong argument in favor of studying and preserving extraterrestrial microbial life33; we should not go out of our way to destroy microbial life, because that life might be very useful. The main moral issue about primitive non-sentient life, however, is not the question of instrumental value, but rather the question of intrinsic value: Is there a moral obligation for humans not to manipulate or even end extraterrestrial microbial life forms? This problem is, in all likelihood, the most pressing moral issue about extraterrestrial life and space colonization and one that deserves greater practical attention34. A common argument in favor of the intrinsic value position is that of conation or goal-orientedness35 36: Because even microbial life forms act vaguely rational (they have goals and behave so as to achieve their goals), their existence has some intrinsic value. The problem with this moral argument is that it can easily lead to the conclusion of strong conservationism, whereby any habitable planet or moon should remain uncolonized, lest we interfere with microbes that we might have failed to detect37. In addition, if we accept a strong version of the intrinsic value argument, we already have immense moral problems: On Earth, we do not particularly care for any microbial life form on intrinsic grounds, and we even actively fight some of them. Primitive sentient life are life forms that are not as intelligent as humans, but that are sentient, in the sense of being able to experience positive or negative affective states. Even though sentience is not a perfectly precise concept38, and even though we lack the means for truly assessing qualia (subjective experiences) of life forms other than humans39, it is almost certain that we humans are not the only life form capable of experiencing pain and pain-related suffering and that many animals on our planet are sentient as well40. Sentient extraterrestrial life forms require a different moral stance than non-sentient life forms. Imagine, for example, that two human space ship are about to land on an exoplanet. As the space ships are landing, the exhaust from their engines heats up the ground. Space ship A is landing on a nest of insect-like non-sentient life forms, frying them alive in the process. Space ship B is landing on a herd of bunny-like sentient creatures, frying them alive in the process. Both outcomes are unfortunate, but undoubtedly, killing the sentient bunny-like creatures must be morally worse than killing the non-sentient insect-like creatures, because the bunnies experienced enormous pain while they were being killed. Our moral stance towards sentient primitive extraterrestrial life will have to take sentience into account. Avoiding suffering in sentient extraterrestrial life should be a universal rule of space colonization. Somewhat obviously, such a rule would also prohibit treating sentient extraterrestrial life forms as food (But it is highly improbable that humans would have to routinely rely on extraterrestrial sentient life forms as sources of nutrition, even though we would be technologically advanced enough to engage in intersolar space colonization. We are in the process of overcoming traditional agriculture today41; reverting to traditional agriculture on future extrasolar colonies would amount to an extraordinarily improbable and inefficient anachronism.). Non-primitive sentient life are life forms that are sentient and possess a general intelligence at least as great as our own (It is possible that highly intelligent life forms might be non-sentient, but at least on Earth, sentience seems to correlate with intelligence.). The moral challenge of this type of extraterrestrial life is the same as with primitive sentient life, and there are additional moral problems to consider. If there are intelligent life forms beyond Earth, their levels of technological development will have great variance; some life forms will be intelligent, but not yet developed, whereas others will be intelligent and much more technologically advanced than we are. Intelligent life forms that are less technologically developed than we are present us with a moral problem: Should we interact with such civilizations and try to help them develop faster and overcome problems? This moral problem has perhaps most famously been explored in the television show Star Trek with its “Prime Directive”: The fictional United Federation of Planets is never to interfere with a technologically undeveloped civilization in order to avoid doing damage (Alas, the protagonists of Star Trek end up violating the Prime Directive time and again; doing so makes for a good story.). More generally, the problem of non-interference can be described as a reversed Zoo hypothesis42, whereby it is not extraterrestrial civilizations treating Earth like a conservation project, but us humans pondering whether we should treat extraterrestrial civilizations as conservation projects. A strong argument in favor of non-interference is the risk of both causing bad outcomes, both in the short- as well as in the long-term. Interacting with less developed civilizations might inadvertently do more harm than good, and it might steer the affected civilizations away from a path to development that might be beneficial to humankind in the long run. On the other hand, however, not investing a small amount of resources to greatly improve lives and reduce suffering seems morally dubious. If an extraterrestrial civilization that is going through a historical era similar to our Middle Ages is confronted with some catastrophic disease like our Black Death pandemic, not helping that civilization fight that pandemic seems cruel; not least because the cost for helping that civilization would almost certainly be trivially low. 3.4 Cosmic suffering Imagine that humankind has successfully mastered phase II colonization (colonization beyond our Solar System). All the problems described in the previous sections and subsections have long been successfully solved, and humankind is progressing steadily and peacefully. Then, something happens. At some point and for some reason, future humans decide that they do not want to merely engage in space colonization, but to do more: Actively seed the universe with (non-human) life43. Given the technological development of future humankind, it is relatively easy to send out non-sentient primitive life forms across the galaxy. Unfortunately, something horrible happens: The primitive microbial life-forms sent out into the cosmos mutate into aggressive bacteria that attack any life form they encounter, including sentient life – and in doing so, they cause tremendous pain and agony in the organisms they attack. The benevolent idea of spreading life has quickly turned into unimaginable suffering of trillions of sentient beings across the galaxy. Colonizing humans have thus created suffering on a cosmic, or astronomical, scale44. Cosmic suffering is the risk of creating suffering on a scale that is either not possible or not as probable without space colonization. There are many potential scenarios in which successful space colonization results in cosmic suffering. For example, the general problem of the repugnant conclusion discussed further above can also be regarded as an example of this class of risks. Cosmic suffering is a severe problem because it is contingent on, or at least made more likely by, successful space colonization. The conceptually challenging aspect of cosmic suffering is the correlation of cosmic suffering with the degree of space colonization: The greater the level of space colonization, the greater the risks of cosmic suffering become. This is the opposite of the relationship between space colonization and existential risks: The greater the level of space colonization, the lower existential risks become – this is one of the main motivations for space colonization, after all. In other words, successful space colonization decreases the probability that something goes wrong for humankind in terms of existential risks, but it increases the probability that something goes wrong in terms of suffering for the whole universe. 4. Security challenges In the above discussions of political and moral challenges, it is presumed that the problems and challenges that arise do so in a generally peaceful system of colonization. However, peace in the sense of a lack of armed conflict is not guaranteed with space colonization. On the contrary: Space colonization might produce new kinds of security challenges. 4.1 Inter-colonial war Violence and war have been decreasing over the course of our civilization’s history45 46 47. The decrease in violent armed conflict has coincided with an increase in cultural, political, and economic interconnectedness. Even though major armed conflicts are not yet a thing of the past48, humankind will probably continue on its current trajectory of peace. With space colonization, however, the trend of growing closer together might reverse because of increasing fragmentation, and with that reversal, peaceful cooperation might again give way to armed conflict. Some amount of **human fragmentation** due to space colonization is almost **inevitable**. One of the strongest biases we humans have is the **intergroup** bias49: We tend to separate people into ingroups and outgroups, and we generally favor our own ingroup over any outgroup. Our ingroup favoritism is often the source of **collective identity**: We identify with our home city and think it is better than other cities; we identify with our favorite football team and think it is better than other teams; we identify with our country of origin and think it is better than other countries. In a future in which humans have successfully mastered type I colonization (colonization within our Solar System) and perhaps even type II colonization (intersolar colonization), belonging to one habitat rather than another will almost certainly also be a source of collective identity. Humans born and raised on Venus would probably have more positive general attitudes towards Venus than towards **Earth**. That is not a problem in and of itself, but it **can become a problem**: If humankind is very successful at space colonization and manages to establish colonies across the galaxy, the **ingroup dynamics within colonies** and regions of colonies might grow **so much** that the **perceived benefits of armed conflict increase**, and the perceived costs decrease. In part, this might be due to the infrahumanization (or dehumanization) bias50: Our intergroup bias can have the effect of perceiving members of the outgroup as less human than members of our own ingroup. The problem of intergroup bias and armed conflict could be compounded by real **biological** differences in the long-term future. In the long term, different colonies of humans might adopt different stances on human enhancement technology and embrace different kinds of enhancement technologies. These differential paths of human enhancement might result in **technology-induced quasi-speciation**, whereby different strands of humans have increasingly distinct biological traits. The ultimate result of such a development might be a strong fragmentation of humankind and an increasing arms race in order to defend against the outgroup of all the (former) humans that are different from the ingroup (former) humans51. 4.2 Extraterrestrial (existential) risks Space colonization will increase the probability of discovering and coming into contact with **extraterrestrial intelligence**, either **biological** or **artificial** (in the sense of hypothetical advanced artificial general intelligence52). That prospect poses some moral challenges, as argued in subsection 3.3. However, it might also pose a **security challenge** if an extraterrestrial intelligence more technologically advanced than humankind has goals and preferences that go **against the goals and preferences of humankind.** In general, there are three categories of attitudes an extraterrestrial intelligence can have towards humankind53. First, an extraterrestrial intelligence can be benevolent. A benevolent extraterrestrial intelligence is one that would change its goals and preferences upon learning of humankind. Humankind is a benevolent intelligence: If we, for example, came into contact with an extraterrestrial civilization, we would obviously take the goals and preferences of that civilization into account and update our own goals and preferences, since we are morally advanced enough to do so. Second, an extraterrestrial intelligence can be apathetic. An apathetic extraterrestrial intelligence is one that does not at all change its goals and preferences upon learning of humankind. An apathetic intelligence would neither try to accommodate humankind, nor would it react in some non-friendly way. It would not care at all. The attitude of an apathetic intelligence is similar to the attitude we humans have when it comes to some random microbial life form on Earth: We might understand that that life form exists, but we do not care either way. Third, an extraterrestrial intelligence can be **hostile**. Hostility in a general sense means that an intelligence reacts to learning of humankind by regarding its own goals and preferences as categorically more important than humankind’s. A hostile extraterrestrial intelligence is not necessarily a security threat to humankind; hostility in this context does not mean hostility in the Hollywood kind but hostility in the sense of active disregard of humankind’s goals and preferences. That, however, might still represent a **tremendous security risk**. For example, a hostile intelligence might **prefer humankind not to exist** because our **mere existence** is perceived as a **slight discomfort** to the extraterrestrial intelligence. Hostile extraterrestrial intelligence thus represents a **form of existential risk.**

#### Every second of delayed colonization outweighs.

Phil **Torres 18**. Project for Future Human Flourishing. 06/2018. “Space Colonization and Suffering Risks: Reassessing the ‘Maxipok Rule.’” Futures, vol. 100, pp. 74–85.

7. Conclusion Let’s now return to the topic of section 1, i.e., the astronomical waste argument. According to Bostrom, our first priority is to reduce existential risk, because an existential catastrophe would prevent us from reaching a stable state of technological maturity and technological maturity is necessary to realize astronomical value. Furthermore, to reach technological maturity, we will need to colonize space. It follows that utilitarians (in particular) should prioritize existential risk reduction while also advocating for the colonization of space as soon as possible. Seth Baum (2016) echos this sentiment when he argues that, if one accepts consequentialism, “space colonization should proceed with caution, but ultimately should proceed at immense scale.” Yet a closer look at what I have argued are the most probable results of colonizing the “last great frontier” suggests that doing so would yield a state of Hobbesian “warre” in which civilizations wallow in perpetual anxiety—existential anxiety—when they aren’t actively engaged in confrontations with their neighbors. The argument that I present thus invites a Gestalt switch: rather than peering up at the firmament and pondering how much of our cosmic endowment of negentropy is being lost that could **realize some form of positive “value,”** one should instead ponder **how much negentropy is being lost that could realize an s-risk, or a condition marked by astronomical amounts of pain, misery, dread, fear, and suffering**. In a **phrase**, **every second of delayed colonization should be seen as immensely desirable, and the longer the delay, the better.** This is not a conclusion that I find particularly appealing, yet I see no obvious flaws in the above arguments.

### 2NC --- AT Space Col --- Incompatible

#### Colonization is incompatible with growth

Konrad **Szocik 19**. University of Information Technology and Management in Rzeszow, Department of Philosophy and Cognitive Science. 01/2019. “Should and Could Humans Go to Mars? Yes, but Not Now and Not in the near Future.” Futures, vol. 105, pp. 54–66.

Milligan (2011) discusses argument from duty to extend human life. Interplanetary settlement is one of ways of realization of this duty. He adds that humanity should do that by, among others, involving private companies to invest in space technology (Milligan, 2011, p. 191). I find here at least four unjustified assumptions. First, even if there is duty to extend human life, it is not an absolute postulate, is still a relative value which should take into account issues pertaining to ecosystem and sustainable development. Second, there is no reliable analysis which shows that space expansion is the best and/or at least necessary option. No one is able to anticipate and to calculate cost to benefit ratio of such unprecedented project in human history as a mass exodus to Mars (or elsewhere in space). Third, following the ethics of quality of life, we have duty to take care for some minimal level of quality, comfort, pleasure, and well-being of the mankind. Living on post-catastrophe Earth in any kind of refuge still may be a better place to live than Mars habitat. Needless to say that physical properties of Mars including reduced gravity or cosmic ray may be the source of permanent harm and deprivation (the full lists of physiological risks in space, see: Letter Report, 2016). Is living in small, confined, and relatively unsafe Mars habitat worth risking human life? Fourth, Milligan proposes that private companies will want to invest in the space industry. But the capitalistic idea of **privatization** has some **limitations**. As classic economic theories state, this idea may be applied only when **cost-benefit ratio is profitable for the private investo**r. This common economic knowledge shows that the main difference between public and private investors lies in their different approaches to profits and responsibility. Expected benefits should justify risk and costs of investing by private investor but this is **not the case of space missions** (Genta, 2014). Max Grimard (2012), p. 2) takes for granted that private investors are not long-term oriented, mostly in deep-space missions where there are no direct benefits. Only a public investor permanently sponsored by taxes can conduct **long-term, intergenerational project** that is **not oriented toward profits**. Public transport and public medical care are good illustrations of systems oriented on common welfare, not profits. They are continued despite failures and risks. Another example is building of public roads. Despite possible exemptions, only governments are able to invest in building many kilometers of highway, tunnels, or bridges. In some cases, private investors and/or their consortium realize such projects but only within **public-private partnership**. After that, they **get back invested money** by charges paid for use of the roads. **Space industry faces challenges**. First, it is obliged to take big effort to get access to effective human space mission projects. Even the **shortest scenario** of human mission to Mars is a complex task including journey to Mars, habitat on Mars, infrastructure enabling launch, and return journey to Earth. **Permanent** concerns are human **psychological** and **physiological** **health** and basic human **survival**. Possible **profits** which could attract possible private investors are **unclear**. Currently achievable profits in space industry include Earth observation or telecommunication (Borowitz & Battat, 2016), but that is **not likely enough**. Second, **putative future final products as safe spacecraft** and **safe space habitat** require **long-term, perhaps intergenerational effort** and investing which will **not be refundable neither profitable**. The problem arises when no real and possible profits are expected. Even if commercial companies would be **able** to invest their money in interplanetary project, **why they should do that?** How could they earn money by sending people to Mars? Who will pay for it? Can we expect that at least one millionaire decides to go to Mars? How much he should pay for this service to make it profitable for investors to cover costs of multi-decade efforts preceding preparation of first flight? Current commercial space projects as cargo service provided by **Space X** or planned in the near future space tourism including trips to low Earth orbit and space hotels, or asteroid mining are **substantially different than human mission to Mars.** Advocates and enthusiasts of private sector miss this difference. There is a big **substantial technological gap** between Elon Musk’s investment to the ISS, and an entrepreneur’s capacity to organize human mission to Mars.

### 2NC --- AT Space Col --- Fails

#### Independent colony is impossible.

**Levchenko et al. 19**. Professors in the Plasma Sources and Applications Centre/Space Propulsion Centre, NIE, Nanyang Technological University. 2019. “Mars Colonization: Beyond Getting There.” Global Challenges, vol. 3, no. 1.

Settlement of Mars—is it a dream or a necessity? From scientific publications to public forms, there is certainly little consensus on whether colonization of Mars is **necessary** or even **possible**, with a rich diversity of opinions that range from categorical It is a necessity!20 to equally categorical Should Humans Colonize Other Planets? No.21 A strong proponent of the idea, Orwig puts forward five reasons for Mars colonization, implicitly stating that establishing a permanent colony of humans on Mars is no longer an option but a real necessity.20 Specifically, these arguments are: **Survival of humans as a species**; Exploring the potential of life on Mars to sustain humans; Using space technology to positively contribute to our quality of life, from health to minimizing and reversing negative aspects of anthropogenic activity of humans on Earth; Developing as a species; Gaining political and economic leadership. The first argument captures the essence of what most space colonization proponents feel—our ever growing environmental footprint threatens the survival of human race on Earth. Indeed, a large body of evidence points to human activity as the main cause of extinction of many species, with shrinking biodiversity and depleting resources threatening the very survival of humans on this planet. Colonization of other planets could potentially increase the probability of our survival. While being at the core of such ambitious projects as Mars One, a **self‐sustained colony of any size** on Mars **is hardly feasible in the foreseeable future**. Indeed, sustaining even a **small number** of colonists would require a **continuous supply of food, oxygen, water and basic materials**. At this stage, it is not clear whether it would be possible to establish a system that would generate these resources **locally**, or whether it would at least in part rely on the **delivery** of these resources (or **essential components** necessary for their local production) from **Earth**. Beyond the supply of these very basic resources, it would be quite challenging if not impossible for the colonists to independently produce **hi‐tech but vitally important assets** such as medicines, electronics and robotics systems, or advanced materials that provide us with a decent **quality of life**. In this case, would their existence become little more than the **jogtrot of life**, as compared with the standards expected at the Earth?22

#### Technologically impossible.

**Robinson 16** [Kim Stanley, TIME Magazine “hero of the environment,” PhD, Muir environmental fellow. “What Will It Take for Humans to Colonize the Milky Way?,” <https://www.scientificamerican.com/article/what-will-it-take-for-humans-to-colonize-the-milky-way1/?redirect=1>] BJR

The idea that humans will eventually travel to and inhabit other parts of our galaxy was well expressed by the early Russian rocket scientist Konstantin Tsiolkovsky, who wrote, “Earth is humanity’s cradle, but you’re not meant to stay in your cradle forever.” Since then the idea has been a staple of science fiction, and thus become part of a consensus image of humanity’s future. Going to the stars is often regarded as humanity’s destiny, even a measure of its success as a species. But in the century since this vision was proposed, things we have learned about the universe and ourselves combine to suggest that moving out into the galaxy may not be humanity’s destiny after all. The problem that tends to underlie all the other problems with the idea is the **sheer size of the universe**, which was not known when people first imagined we would go to the stars. Tau Ceti, one of the closest stars to us at around 12 light-years away, is 100 billion times farther from Earth than our moon. A quantitative difference that large turns into a qualitative difference; we can’t simply send people over such immense distances in a spaceship, **because a spaceship is too impoverished an environment to support humans for the time it would take**, which is on the order of centuries. Instead of a spaceship, we would have to create some kind of space-traveling ark, big enough to support a community of humans and other plants and animals in a fully recycling ecological system. On the other hand it would have to be small enough to accelerate to a fairly high speed, to shorten the voyagers’ time of exposure to cosmic radiation, and to breakdowns in the ark. Regarded from some angles bigger is better, but the bigger the ark is, the proportionally more fuel it would have to carry along to slow itself down on reaching its destination; **this is a vicious circle that can’t be squared**. For that reason and others, smaller is better, but smallness creates problems for resource metabolic flow and ecologic balance. Island biogeography suggests the kinds of problems that would result from this miniaturization, but a space ark’s isolation would be far more complete than that of any island on Earth. The design imperatives for bigness and smallness may cross each other, leaving any viable craft in a non-existent middle. **The biological problems** that could result from the radical miniaturization, simplification and isolation of an ark, no matter what size it is, now must include possible impacts on our microbiomes. We are not autonomous units; about eighty percent of the DNA in our bodies is not human DNA, but the DNA of a vast array of smaller creatures. That array of living beings has to function in a dynamic balance for us to be healthy, and the entire complex system co-evolved on this planet’s surface in a particular set of physical influences, including Earth’s gravity, magnetic field, chemical make-up, atmosphere, insolation, and bacterial load. Traveling to the stars means leaving all these influences, and trying to replace them artificially. What the viable parameters are on the replacements would be impossible to be sure of in advance, as the situation is too complex to model. Any starfaring ark would therefore be an experiment, its inhabitants lab animals. The first generation of the humans aboard might have volunteered to be experimental subjects, but their descendants would not have. These generations of descendants would be born into a set of rooms a trillion times smaller than Earth, with no chance of escape. In this radically diminished enviroment, rules would have to be enforced to keep all aspects of the experiment functioning. Reproduction would not be a matter of free choice, as the population in the ark would have to maintain minimum and maximum numbers. Many jobs would be mandatory to keep the ark functioning, so work too would not be a matter of choices freely made. In the end, sharp constraints would force the social structure in the ark to enforce various norms and behaviors. The situation itself would require the establishment of something like **a totalitarian state**. Of course sociology and psychology are harder fields to make predictions in, as humans are highly adaptable. But history has shown that people tend to react poorly in rigid states and social systems. Add to these social constraints permanent enclosure, exile from the planetary surface we evolved on, and the probability of health problems, and the possibility for psychological difficulties and mental illnesses seems quite high. Over several generations, it’s hard to imagine any such society staying stable. Still, humans are adaptable, and ingenious. It’s conceivable that all the problems outlined so far might be solved, and that people enclosed in an ark might cross space successfully to a nearby planetary system. But **if so, their problems will have just begun**. Any planetary body the voyagers try to inhabit will be either alive or dead. If there is indigenous life, **the problems of living in contact with an alien biology could range from innocuous to fatal**, but will surely require careful investigation. On the other hand, if the planetary body is inert, then the newcomers will have to terraform it using only local resources and the power they have brought with them. This means the process will have a slow start, and take on the order of **centuries,** during which time the ark, or its equivalent on the alien planet, would have to continue to function without failures. It’s also quite possible the newcomers won’t be able to tell whether the planet is alive or dead, as is true for us now with Mars. They would still face one problem or the other, but would not know which one it was, a complication that could slow any choices or actions. So, to conclude: **an interstellar voyage would present one set of extremely difficult problems, and the arrival in another system, a different set of problems**. All the problems together create not an outright impossibility, but a project of extreme difficulty, **with very poor chances of success.** The unavoidable uncertainties suggest that an ethical pursuit of the project would require many preconditions before it was undertaken. Among them are these: first, a demonstrably sustainable human civilization on Earth itself, the achievement of which would teach us many of the things we would need to know to construct a viable mesocosm in an ark; second, a great deal of practice in an ark obiting our sun, where we could make repairs and study practices in an ongoing feedback loop, until we had in effect built a successful proof of concept; third, extensive robotic explorations of nearby planetary systems, to see if any are suitable candidates for inhabitation. Unless all these steps are taken, **humans cannot successfully travel to and inhabit other star systems.** The preparation itself **is a multi-century project**, and one that relies crucially on its first step succeeding, which is **the creation of a sustainable long-term civilization on Earth**. **This achievement is the necessary, although not sufficient**, precondition for any success in interstellar voyaging. If we don’t create sustainability on our own world, there is no Planet B.

#### Humans couldn’t survive.

**Al-Rodhan 18** [Nayef Al-Rodhan is an Honorary Fellow at St Antony’s College, University of Oxford, and Senior Fellow and Head of the Geopolitics and Global Futures Programme at the Geneva Centre for Security Policy. “Sustainable Governance of Future Outer Space Colonies,” <http://www.css.ethz.ch/en/services/digital-library/articles/article.html/2187dc37-a3f7-4ee3-9d2f-151bc6e750d7/pdf>] BJR

A key impediment to humans thriving in space, for now, is **the array of physical difficulties presented by the outer space environment**, which is extremely hostile for humans. Faced with a lack of oxygen and air pressure, extreme temperatures, solar wind, radiation, space dust and micrometeoroids, **humans would not be able to survive** without protective gear. Even with protection, being in space has short-term and long-term negative physiological effects. Bones become brittle, sleeping and eating are difficult and body fluids tend to float upwards, bloating the face. Vision is also deteriorated, as the eyeballs are not under the same pressure as on Earth. Preventing muscles from atrophying is also a challenge in a zero gravity environment; six months in space causes a 25% reduction in muscle strength. To combat this loss, NASA’s Advanced Resistance Exercise Device (ARED) has developed vacuum resistance machines, but they cannot completely mitigate muscle strength reduction. After returning from space, astronauts have a difficult time regaining their strength. Some may never do so fully. Yet **the biggest hurdle** to space colonization **remains cosmic radiation exposure**, as it damages DNA and causes cancer. Earth’s magnetic field shields us from 99.9% of radiation coming from space and the atmosphere provides additional protection. Mars, for example, **has no magnetic field** (although magnetized rocks on its surface indicate there once existed a magnetosphere which later faded) and possesses very little atmosphere. Potential colonizers would invariably need to find ways to shield themselves from the dangerous levels of radiation on Mars.

### 2NC --- AT CCS --- Fails

#### CCS will not solve—expenses and storage leaks contribute to global warming.

**Lipski 3/23** [Bronya—lawyer at Environmental Justice Australia. EJA’s submission to the Senate Standing Committee on Communications and Environment on the Clean Energy Finance Corporation Amendment (Carbon Capture and Storage) Bill 2017, and other submissions on this amendment, can be seen here, “Coal industry’s carbon capture dream is a dangerous fantasy,” *Renew Economy,* March 23rd, 2018, <https://reneweconomy.com.au/coal-industrys-carbon-capture-dream-dangerous-fantasy-41399/>] KS

So let’s remind ourselves of three solid reasons why **CCS is not an option** to reduce climate pollution and curtail climate change. One: **It doesn’t work.** Globally and at home, CCS has consistently failed to deliver on its promise to reduce future carbon dioxide emissions. These failures have come at eye-watering expense to companies and governments alike. They include: Southern Company, owners of the Kemper “clean coal” plant in Mississippi, US, which spent some US$7.5 billion before pulling the plug after years of research and years of technological failure; Boundary Dam CCS plant in Saskatchewan, Canada, which secured half or less than half of the CO2 it promised to capture, ran way over-budget and faced multi-million dollar payouts for failure to deliver on its contractual terms; The AU$4.3 billion ZeroGen CCS project which the Queensland government abandoned after losing $96.3 million on funds to retrofit the Stanwell power station. For communities that live around power stations, the promises of CCS are attractive because they suggest the lives of coal-fired power stations can be prolonged in a way that keeps people in jobs and reduces pollution. The lives of power stations should not be prolonged. These are old, unreliable machines that need to be phased out to protect the climate and people’s health. These communities need certainty about their future, not false hope about propping up a technology that is past its use-by date. Two: **investors are unlikely to fund CCS because it’s more expensive to produce energy with CCS** than without. There’s basically no incentive for the private sector to invest in technology that is unlikely to provide a decent financial return in the short-mid term, if at all. CO2CRC, the Australian CCS research organisation, which receives considerable government funding, promotes investment in retrofitting existing coal-fired power stations in Victoria’s Latrobe Valley. Even this organisation of CCS true believers estimates that CCS retro-fits will cost anywhere from $1.48-$2.45 billion per boiler – and that’s for an existing “high efficiency” brown-coal power station. Australia doesn’t have “high efficiency” power stations and is unlikely to build them. Even if such projects were to get up and running in Australia, you can be absolutely certain these expenses would be passed straight on to consumers, who already bear astronomical power bills. Three: even if CCS was deemed successful in the short-term and employed economically at scale, **CCS will not stop CO2 entering the environment.** In order for CCS to be successful in the long term, the storage systems that hold the carbon need to last in perpetuity to prevent leaks. To put it another way, for CCS to work, it needs to hold on to the captured pollution forever. CCS facility or storage sites will eventually leak and release carbon pollution into the atmosphere and environment. They could fail at a time when the effects of climate change cannot be reversed. Such leaks pose toxic air pollution risks to people and the environment. Leakage of CO2 and increased levels of toxic air pollutants such as nitrogen dioxide and sulphur dioxide, due to additional fossil fuels required for the CCS process, could cause and contribute to a range of costly adverse health impacts to humans and agriculture, including the acidification and eutrophication of land and water. Even if the technology worked well, there’s absolutely no guarantee huge stockpiles of carbon won’t eventually cause the very problem they were designed to mitigate. **CCS fails from a technological perspective, an economic perspective, and a pollution reduction perspective.**

## Indict

### 2NC --- Aff Author Indict

#### Reject their ev – it defines sustainability in a limited context and is full of political biases

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In the opening article of this journal, Komiyama and Takeuchi (2006) regretted the political biases of the concept of sustainable development, to which sustainability science is inextricably linked (Kates et al. 2001). Such biases, they argued, raised concerns about the solidity of its scientific basis, which remained unclear to many (Komiyama and Takeuchi 2006). For degrowth, the weakness of sustainable development as a truly transformative concept directly stems from its falsely consensual nature (Hornborg 2009). Degrowth unveils the ideological role of capitalist growth (Purdey 2010) and opens up the debate about the relations between economy, society and sustainability, including their cognitive, material and political interactions. In other words, degrowth helps to further emphasize the existing contradictions between growth, the environment and social well-being, and envisions a potential multi-scalar transformation pathway towards smaller and localized economies that redistribute wealth, supported by state and supra-national policies. In doing so, degrowth aspires to repoliticize the debates on the science and practice of sustainability.

It has been suggested that sustainability scientists have embraced a ‘thin sustainability’ concept—“meeting human needs, both now and in the future, without degrading the planet’s life support systems” (Miller 2013:283). Such a definition encourages widespread agreement, but limits the degree to which deeper discussions over a ‘thick sustainability’ and what it might mean to different people in different contexts take place (Miller 2013). By providing a thicker meaning of sustainability, degrowth re-politicizes the debate and asks the following question: If we are to guarantee a sustainable and just future for present and future generations, why should our economies grow?

Almost 15 years after sustainability science was coined as a new scientific endeavour (Kates et al. 2001), the problems it aims to address have not diminished but exacerbated. The mismatch between a growing scientific field and effective and sustainable social–ecological change can be explained by different factors, including **insufficient scientific engagement with stakeholders, anachronistic academic institutions and incentives, lack of meta-studies making transdisciplinary sustainability research available to scholars and practitioners and,** in general, a **missing link between knowledge production and action** (Wiek et al. 2012; van der Leeuw et al. 2012; Kauffman and Arico 2014; Miller et al. 2014). Accordingly, ways forward have been advanced including fundamental reforms in the academy, more comparative studies making sustainability insights accessible and applicable, and a new social contract between scientists and society in which scientists participate in the co-production of knowledge for action with other stakeholders (Wiek et al. 2012; Kauffman and Arico 2014; Wittmayer and Schäpke 2014). Important as these factors may be, we argue that if they are not articulated into a broader critique of the fundamental underpinnings of our societies, such as that offered by degrowth and other transformation approaches (Escobar 2015, this feature), sustainability science is unlikely to meaningfully inform the social–ecological transformation required to confront the global environmental crisis. Uncovering the ideology and practice of economic growth (connected to capitalism) as the ultimate driver of unsustainability may help sustainability science to further flourish and be more influential in re-defining the Earth’s sustainable future.