## 1

#### Interpretation: The affirmative debater must defend reducing intellectual property protections for substances that treat diseases. To clarify, they may not defend substances that prevent diseases.

#### Violation: They defend COVID vaccines

#### Medicines treat diseases

Webster (Merriam Webster is America's leading and most-trusted provider of language information, accessed on 6-30-21, Merriam Webster, "Definition of MEDICINE,” https://www.merriam-webster.com/dictionary/medicine)// ww pbj

Definition of medicine 1a: a substance or preparation used in treating disease cough medicine

#### Treatment is different than prevention

Pflanzer 20 (Lydia Ramsey Pflanzer is a healthcare editor for Business Insider. She joined Business Insider in 2015 after graduating from Northwestern University, 4-29-2020, accessed 6/30/21, "Scientists are racing to discover ways to treat and prevent coronavirus. Here's the difference between a treatment and a vaccine.," Business Insider, <https://www.businessinsider.com/whats-the-difference-between-a-vaccine-and-a-treatment-2020-4)//ww> pbj

Vaccines are used to prepare the body's immune system to fight off infections. They work by giving the body a small taste of what the virus is like so that way it can produce antibodies that fight off an intruding virus, ideally keeping people from falling ill. Some vaccines protect better than others, and they're typically administered across broad populations. There are vaccines for some infectious diseases, like the flu, smallpox, measles, and chickenpox. But others, like HIV and hepatitis C, don't have vaccines that protect against them. Vaccines that protect against two other deadly outbreaks, MERS and SARS, have yet to be approved after the outbreaks subsided. There are more than 70 potential coronavirus vaccines in the works, with a number in early human trials. Drugmakers are looking into ways to produce the billions of doses that might be needed to suppress the pandemic. Read more: There are more than 70 potential coronavirus vaccines in the works. Here are the top efforts to watch, including the 16 vaccines set to be tested in people this year. FILE - In this March 2020 photo provided by Gilead Sciences, a vial of the investigational drug remdesivir is visually inspected at a Gilead manufacturing site in the United States. Given through an IV, the medication is designed to interfere with an enzyme that reproduces viral genetic material. (Gilead Sciences via AP) FILE - In this March 2020 photo provided by Gilead Sciences, a vial of the investigational drug remdesivir is visually inspected at a Gilead manufacturing site in the United States. Given through an IV, the medication is designed to interfere with an enzyme that reproduces viral genetic material. (Gilead Sciences via AP) Associated Press Treatments, on the other hand, are meant to do just that: treat COVID-19, helping patients sickened by the virus survive and recover more quickly. Treatments for disease are there to lessen symptoms and ultimately improve the outcomes of a particular disease. Sometimes, medications can be used preventatively. For instance, patients with high cholesterol might be prescribed a medication called a statin to prevent heart attacks. Some potential coronavirus treatments are being studied to see if they can prevent people from contracting the virus in the first place. For COVID-19, researchers are testing everything from antimalarial medications to antivirals, to even common heartburn medications in hospitalized patients with the hopes that more patients will survive severe forms of the illness and potentially recover faster. Some are looking at ways to use patients' own bodies to fight the virus with antibody treatments.

#### Vaccines specifically are different from medicines

Immunize BC 20 (Immunize British Colombia is a collaborative project of the BC Ministry of Health, the BC Centre for Disease Control (an agency of the BC Provincial Health Services Authority), the regional health authorities (First Nations Health Authority, Fraser Health, Interior Health, Island Health, Northern Health and Vancouver Coastal Health), the BC Pharmacy Association and the Public Health Association of BC. Our mission is to improve the health of British Columbians by continuing to reduce the number of vaccine-preventable diseases, along with the illness, disability and death that they cause, What are vaccines?, Date last reviewed: Thursday, Mar 19, 2020, accessed on 6-30-21, <https://immunizebc.ca/what-are-vaccines)//ww> pbj

Vaccines are products that protect people against many diseases that can be very dangerous and even deadly. Different than most medicines that treat or cure diseases, vaccines prevent you from getting sick with the disease in the first place.

#### Standards:

#### [1] Limits – they explode the topic to include tons of substances that prevent disease rather than treat them like soap, medical supplies, or food and make it so there is *no* unified neg generics. The aff still gets the core of the topic lit: they get medicine, innovation, and global inequality. Explosion of aff ground makes neg prep burden impossible, either killing neg ground or forcing the neg to read generics that barely link, always letting aff win. Force the 1AR to read a definition card with a clear list of what’s included and excluded – otherwise, vote neg since they can’t put a clear limit on the topic. Our interp solves – it establishes a clear bright-line for that gives the neg a chance to predict and prepare for every aff ahead of time.

#### Drop the Debater –

#### [1] DTA is the same since you drop the aff

#### Voters:

#### [1] Fairness – constitutive to the judge to decide the better debater, only fairness is in your jurisdiction because it skews decision making

#### [2] Education – the only portable education from debate that we care about

#### Competing Interps:

#### [1] functionally the same as reasonability – we debate over a specified briteline which is a counter interp

#### No RVIs

#### [1] illogical for you to get offense just for being fair – it’s the 1ac’s burden

#### [2] baiting - rvi’s incentivize debaters to read abusive positions to win off theory

## 2

#### Global Vaccine Trust Is rising, but its fragile – people are skeptical

Kelland 21**,** Kate Kelland, Chief scientific writer at CEPI, Reuters health and science correspondent, 2-3-2021, "Global vaccine trust rising, but France, Japan, others skeptical," https://www.reuters.com/business/healthcare-pharmaceuticals/global-vaccine-trust-rising-france-japan-others-sceptical-2021-02-04/

People's willingness to get vaccinated against COVID-19 is rising around the world and more than half of those questioned said they would take the shot if it were offered next week, an updated survey of global vaccine confidence found on Thursday. But attitudes and confidence vary widely in the 15 countries covered in the survey, with France showing high levels of skepticism and some Asian countries showing declining trust in vaccines, while some European nations see rising confidence. Overall, vaccine confidence is higher than in November, when the same survey - conducted in 15 countries and covering 13,500 people each time - found that only 40% would be willing to get vaccinated. The survey, co-led by YouGov and Imperial College London’s Institute of Global Health Innovation (IGHI), found that people in Britain were the most willing to have a COVID-19 vaccine, at 78%, followed by Denmark at 67%. France had the highest proportion of respondents who said they would not take a vaccine, at 44%, but saw a doubling in the proportion who strongly agreed that they would take a vaccine, from 15% in November to 30% in January. In Australia, Japan, South Korea and Singapore, willingness to take a vaccine has dropped off since November, with Japan showing the least preparedness, followed by Singapore. "As vaccines will play a vital role in controlling the pandemic, leaders must act now to help more people understand the benefits of being vaccinated against COVID-19 and make sure that no one is left behind," said David Nabarro, the IGHI's co-director and a World Health Organization expert on COVID-19. The survey is part of efforts by the WHO and other bodies to monitor health-related behavior and attitudes during the pandemic. Since April 2020 researchers have surveyed more 470,000 people worldwide. This most recent survey ran from Jan. 4-24. It found that most people trust vaccines, with two-thirds expressing strong or moderate confidence and only 12% reporting no trust at all. It also found that two-thirds of people believe getting vaccinated is important for their health.

#### Secondary vaccine manufacturers have poorer conditions, which leads to regional holds & mass recalls making them appear suspect for deaths – Moderna proves

Swift 8-2021**,** Rocky Swift, Reuters correspondent. Formerly of State Dept. and Bloomberg News, 8-30-2021, "Japan's Moderna vaccine contamination woes widen as regions put holds on shots," Reuters, https://www.reuters.com/world/asia-pacific/japans-gunma-prefecture-reports-contaminant-moderna-covid-19-vaccine-2021-08-30/

Moderna’s Covid-19 vaccine contamination woes in Japan widened after two regions put temporary holds on shots following the discovery of foreign substances in more batches. The disruption to Moderna supplies comes as Japan battles its worst wave of Covid-19 yet, driven by the contagious delta variant, with new daily infections exceeding 25,000 this month for the first time amid a slow vaccine rollout. The latest reports of vaccine contamination came from Gunma prefecture near Tokyo and the southern prefecture of Okinawa, prompting temporary holds on Sunday on shots from two new Moderna lots. That followed the nationwide suspension of 1.63 million doses last week. A tiny black substance was found in a Moderna vaccine vial in Gunma, an official from the prefecture said, while in Okinawa, black substances were spotted in syringes and a vial, and pink material was found in a different syringe. Japan’s health ministry said some of the incidents may have been due to needles being incorrectly inserted into vials, breaking off bits of the rubber stopper. The ministry and Takeda Pharmaceutical, which distributes the Moderna vaccine in Japan, said there were no safety issues from the Okinawa and Gunma incidents and that there was no need for nationwide suspensions. Unma and Okinawa can resume using vials from the lots in question as long as they do not contain foreign materials, the ministry told a briefing late on Monday. The contamination cases come on the heels of a government report on Saturday that two people died after receiving Moderna shots that were among lots later suspended. The government had said that no safety or efficacy issues had been identified and that the suspension was a precaution. The causes of death are being investigated. “It is unlikely, in my opinion, that contamination of foreign substances led directly to sudden deaths,” said Takahiro Kinoshita, a physician and vice chair of Cov-Navi, a vaccine information group. “If the contaminated substances were dangerous enough to cause death for some people, probably many more people would have suffered from some symptoms after the vaccination. “However, further investigations are definitely needed to evaluate the harm of the particular doses in question. By “Looking at the bigger picture’ Japan earlier halted the use of 1.63 million Moderna doses, shipped to 863 vaccination centers nationwide after Takeda received reports of contaminants in some vials. Some 500,000 people received shots from those supplies, Taro Kono, the minister in charge of the vaccine push, has said. Moderna and Spanish pharma company Rovi, which bottles Moderna vaccines for markets other than the United States, said at the time that the contamination could be due to a manufacturing issue in one of Rovi’s production lines. Rovi said, in a statement on Sunday, that an investigation was under way in coordination with Moderna, Takeda and the health authorities. Takeda also said, on Monday, that the investigation was ongoing. Rovi shares closed down 13.5% on Monday. Nicholas Rennick, an Australian doctor practicing at the NTT Medical Centre in Tokyo, said the contamination “is a serious problem” and there is need to investigate, but given rising Covid-19 cases, Moderna vaccinations should “continue with appropriate precautions.” Severe Covid-19 cases are at record levels in Japan, leaving many people to recuperate at home amid a shortage of critical care beds. Only 44% of its population has been fully vaccinated, lagging vaccination rates of several developed countries. “We’ve got thousands of Delta variant patients around Japan as we speak, spreading the virus, and so many of the population remain unvaccinated and unprotected,” Rennick said. “We have to look at the bigger picture.”

#### Antivaxxers use deaths correlated with the vaccine to incite vaccine fear – Hagler proves

Thompson 21,Jackson Thompson, health reporter at Insider, covers fitness and nutrition in sports, 3-15-2021, "Boxing legend Marvin Hagler's death is being used by anti-vaxxers to push conspiracies about the COVID vaccine," Insider, https://www.insider.com/marvin-haglers-anti-vaccine-conspiracies-2021-3

Boxing legend Marvin Hagler passed away at the age of 66 on Saturday, and the cause of his death has fueled controversy related to the risks of COVID-19 vaccines. Hagler's wife, Kay G. Hagler, confirmed the news in a Facebook post on Saturday, saying that Hagler died in his New Hampshire home from natural causes. "I am sorry to make a very sad announcement. Today unfortunately my beloved husband Marvelous Marvin passed away unexpectedly at his home here in New Hampshire. Our family requests that you respect our privacy during this difficult time," Kay G. Hagler wrote. However, earlier that same day, Hagler's former opponent and friend Thomas Hearns said Hagler was in ICU fighting the after-effects of the COVID-19 vaccine. "A real true warrior Pray for the king and his family.. he's in ICU fighting the after effects of the vaccine! He'll be just fine but we could use the positive energy and Prayer for his Full Recovery!" Hearns wrote. Hearns' post fueled an outpouring of anti-vaccination sentiment in response to Hagler's death. According to the Centers for Disease Control (CDC), the vaccine's side effects can include pain and swelling in the injected arm, as well as tiredness, headache, muscle pain, chills, fever, and nausea. The CDC has also said that the vaccines are "safe and effective" and that severe side effects are extremely rare. Over 92 million doses of COVID-19 vaccines were administered in the United States from December 14, 2020, through March 8, 2021. In that time, the Vaccine Adverse Event Reporting System (VAERS) reported 1,637 deaths among individuals who were injected with a vaccine, according to The CDC. However, there was no evidence linking those deaths to the after-effects of the vaccine. This data didn't stop conspiracy theorists from using Hagler's death as a tentpole in their anti-vaccination campaigns on Saturday. Hearns made a follow-up statement addressing the anti-vaxxer's reaction to Hagler's death on Instagram later in the day via Instagram story. "Allow us to have our peace. Our love and respect to Marvin and his family, this is not an anti vaccine campaign... it's outrageous to have that in mind during the passing of a King, Legend, Father, Husband and so much more," Hearns wrote. Kay G. Hagler also posted a follow-up statement on Facebook, condemning those using her husband's death for their agendas. "I am the only person that know how things went not even his family know all the details and I do NOT accept to read some stupid comment without knowing really what happen," Kay G. Hagler wrote. "For sure wasn't the vaccine that caused his death. My baby left in peace with his usually smile and now is not the time to talk nonsense. “Hagler is not the first former athlete to have his death hijacked by anti-vaccination campaigns. Former MLB player Hank Aaron passed away on January 22, 17 days after posting on Twitter that he'd been vaccinated. Anti-vaxxers falsely linked Aaron's death to the vaccine's after-effects then as well. Georgia Public Health Commissioner Kathleen Toomey told the Atlanta Journal-Constitution that there is "no evidence" that Aaron's death had anything to do with the COVID-19 vaccine. Despite the science proving the vaccines' safety, diverse portions of the general population in the US and elsewhere are skeptical of taking the vaccine. A poll released by NPR/PBS NewsHour/Marist showed that 47% of people who voted for former President Donald Trump said they wouldn't get the vaccine, while just 6% of Joe Biden voters said they wouldn't get it. As long as that sentiment exists, anti-vaxxers could use cases like Hagler's to support their agenda

#### Fear leads to decreased global vaccine trust and vaccine refusal – Has long term impacts on economy and health – turns case

Dovere 21,Edward-Isaac Dovere, Staff writer at the Atlantic, former Chief Washington Correspondent for Politico, 4-10-2021, Vaccine Refusal Will Come at a Cost—For All of Us, The Atlantic, https://www.theatlantic.com/politics/archive/2021/04/vaccine-refusal-hesitancy-economic-costs/618528/

Imagine it’s 2026. A man shows up in an emergency room, wheezing. He’s got pneumonia, and it’s hitting him hard. He tells one of the doctors that he had COVID-19 a few years earlier, in late 2021. He had refused to get vaccinated, and ended up contracting the coronavirus months after most people got their shots. Why did he refuse? Something about politics, or pushing back on government control, or a post he saw on Facebook. He doesn’t really remember. His lungs do, though: By the end of the day, he’s on a ventilator. You’ll pay for that man’s decisions. So will I. We all will—in insurance premiums, if he has a plan with your provider, or in tax dollars, if the emergency room he goes to is in a public hospital. The vaccine refusers could cost us billions. Maybe more, over the next few decades, with all the complications they could develop. And we can’t do anything about it except hope that more people get their shots than those who say they will right now. If the 30 percent of Americans who are telling pollsters they won’t get vaccinated follow through, the costs of their decisions will pile up. The economy could take longer to get back to full speed, and once it does, it could get shut down again by outbreaks. Variants will continue to spread, and more people will die. Each COVID-19 case requires weeks of costly rehabilitation. Even after the pandemic fades, millions of vaccine refusers could turn into hundreds of thousands of patients who need extra care, should they come down with the disease. Their bet that they’ve outsmarted the coronavirus or their insistence that Anthony Fauci and Bill Gates were trying to trick them will not stop them from going to the doctor when they’re having trouble breathing, dealing with extreme fatigue, or struggling with other lasting effects of COVID-19. (A new study found that 34 percent of COVID-19 survivors are diagnosed with a neurological or psychological condition within six months of recovering from the initial illness.) The economic costs of vaccine refusal aren’t yet a major part of the political conversation. That’s likely to change as we move past the first year of the pandemic. “You have a liberty right, and that unfortunately is imposing on everyone else and their liberty right not to have to pay for your stubbornness. And that’s what’s maddening,” Jay Inslee, the governor of Washington, told me. Inslee is 70, and fully vaccinated. The three-term Democrat was in a good mood because he was on his way to see his baby granddaughter, whom he hadn’t hugged in a year. But after what he’s gone through since early 2020—the first American COVID-19 outbreak and the first explosion of COVID-denialist demonstrations were both in Washington—he’s angry and sad that so many people are refusing to get their shots. He had the latest numbers: 15 Washingtonians had died of COVID-19 the day we spoke. More than 300,000 state residents who had been eligible for a vaccine for at least three months still hadn’t gotten one, including 27 percent of those over 65. Some of those people hadn’t been able to get appointments. Some may have been nervous, but would eventually get a vaccine. Some had just refused, and will continue to do so. Those people are “foisting [their] costs on the rest of the community,” Inslee said. “There’s a long, long economic tail of disease prevalence as a result of people who refuse to get vaccinated.” But, he stressed, “it pales in comparison to people losing their lives.” Inslee read me some data he had gotten from the Republican messaging maven Frank Luntz, which the governor said was going to inform new public-awareness campaigns that the state is developing to break through to Republican men, the people most likely to say they won’t get vaccinated, according to polling. Two appeals seem to work best: First, the vaccines are safe, and they’re more effective than the flu vaccine. Second, you deserve this, and getting vaccinated will help preserve your liberty and encourage the government to lift restrictions. (That last idea is what Jerry Falwell Jr. focused on in the vaccination selfie he posted this week, captioned, “Please get vaccinated so our nutcase of a governor will have less reasons for mindless restrictions!”) Inslee hopes that emphasizing those points will persuade more Republican men to get their shots. But he’s not sure it will work. The prospect of lower health-care costs has led conservatives to back health-related regulations in the past. In 1991, Pete Wilson, then the Republican governor of California, signed a law mandating helmets for motorcyclists, and made a conservative argument for the new regulation. “We don’t know exactly how much money and how many lives will be saved with this legislation,” Wilson said at the signing ceremony, which was held at a hospital in the state capital. “But we do know that the cost of not enacting it is too great for a civilized society to bear.” Then again, President Ronald Reagan was famously resistant to seatbelt and airbag laws, which also reduce health-care spending. Though there are some notable vaccination holdouts among Republican officials, most in Congress and in state leadership positions have encouraged their constituents to get the shots. “I saw on some program last week that Republican men, curiously enough, might be reluctant to take the vaccine. I’m a Republican man, and I want to say to everyone: We need to take this vaccine,” Senate Minority Leader Mitch McConnell said at an event in Kentucky this week. Brad Wenstrup, who worked as a podiatrist before becoming a Republican congressman from Ohio, has been so eagerly promoting the vaccines that he got trained to administer them. But the Republican politics around COVID-19 remain treacherous, and when I reached out to several Republican members of Congress, telling their aides I’d be eager to have them make a Wilson-esque fiscally conservative argument for vaccination, I couldn’t find anyone willing to make that case to me. Calculating the exact long-term costs is tricky; we have only a year’s worth of data on the lasting health consequences of COVID-19, and even less on the efficacy of the vaccines and Americans’ resistance to getting them. Krutika Amin, who conducts economic and policy research for the Kaiser Family Foundation, tried to sketch out what the taxpayer bill might be. Before the pandemic, about 1 million Americans were diagnosed with pneumonia each year in emergency rooms alone. About 1.5 million were hospitalized for pneumonia annually, at an average cost of $20,000 per stay. COVID-19 has been reliably shown to make pneumonia worse. In April 2020, a Kaiser Family Foundation study projected that the cost of treating just COVID-19 cases for the uninsured would range from $13.9 billion to $41.8 billion. If even close to 30 percent of Americans get COVID-19 because they refused to get vaccinated, Amin told me, you’ll see a massive spike in health-care costs. Kathleen Sebelius, who spent five years as Barack Obama’s secretary for health and human services, told me that about a quarter of Americans are children, and so far, no vaccine has been approved for use in people under 16 years old. If all adults who say they’ll get a vaccine get one, barely more than half of the country will be immunized, which is far short of herd immunity. In kids, “we have a very vulnerable population where we know they may not get as sick and die as much as adults, but they can get sick and die,” Sebelius said. “We have to think about this a little bit like secondhand smoke. By making an adult choice, you’re putting a whole lot of other people at risk in a way that very few other choices do.” As lockdowns are lifted, Sebelius hopes that vaccine passports will create social pressure, which might wear down hesitancy if unvaccinated people are barred from sports games, concerts, and other public events. But the political divisions on that are already clear, with leaders such as Republican Mississippi Governor Tate Reeves going on CNN to stress that he wants his constituents to get vaccinated, but that he’s opposed to vaccine passports. Texas Governor Greg Abbott on Tuesday signed a preemptive executive order banning them. Although this resistance may halt any federal vaccine-passport efforts, some states and many private companies are independently exploring the idea. So is the Republican National Committee. Once getting a vaccine appointment is easy and health departments have filled the airwaves with PSAs, will 30 percent of Americans still say they won’t get a shot? Public-health officials and government leaders hope that vaccine hesitancy will drop. Some surveys suggest that could happen. In the meantime, winding down restrictions on gatherings will likely maximize the spread of concerning variants, Sebelius noted. Health complications for vaccine refusers who catch one of the new strains could be even worse than those caused by the original strain, she said. “We are still very vulnerable to things coming our way, and anybody who has not taken at least this preliminary precaution has no idea what’s going to hit them,” Sebelius said. For the unvaccinated, she said, the threat of COVID-19 “is not getting better.”It’s not getting cheaper either.

## 3

#### America’s maintaining hegemony and countering China’s rise through “counter-punching” strategies, but sustained innovation and private sector investment are key – reject “US declining now” args – the US has historically punched over its weight whenever it’s challenged

**Harr 8/3** [Scott, Army Special Forces Officer and Ph.D. Candidate at the Helms School of Government, Liberty University. He holds an undergraduate degree in Arabic Language Studies from West Point and a Master’s degree in Middle Eastern Affairs from Liberty University. A trained Arabic and Farsi speaker with over four years of cumulative deployment time in the Middle East, his work has been featured in The Diplomat, RealClearDefense, The Strategy Bridge, Modern War Institute, Military Review, The National Interest, and Joint Force Quarterly among other national security-focused venues, “By Avoiding Arms Races, America Can Counter China’s Rise”, 08-03-2021, https://nationalinterest.org/feature/avoiding-arms-races-america-can-counter-china%E2%80%99s-rise-191094]//pranav

**Rather than falling into the power projection arms race “trap“ that China desires, U.S. competitive strategies addressing China** should **adopt a framework based on “counter-punching**.” As its name suggests, the counterpunch incorporates both defensive (“counter”) and offensive (“punch”) elements. Additionally, it is an adaptive maneuver that requires disciplined understanding and controlled strength that, effectively employed, offers better alternatives towards protecting and preserving U.S. power in the face of challenges from China. The defensive element of an American counterpunch towards China involves adopting military restraint and a revamped examination of deterrence. Classic deterrence strategy involves presenting the credible threat of force to adversaries to create undesirable risks for would-be aggressors. The key to deterrence, as Kenneth Waltz famously argued, is determining how much deterrence is “enough” to dissuade aggressors. That is, deterrence does not necessarily require the presentation of power projection assets capable of completely destroying an adversary, but only enough assets to make the risks of aggressive behavior not worth the projected losses involved. Seen in this light, a strategy that diligently examines how much deterrence is “enough” potentially eliminates the impulse to sustain the ever-increasing stakes in costly arms races while, critically, **offering a chance to reinvest excess “deterrence” resources into areas that will preserve and protect U.S. power**. The national resources freed up by foregoing an arms race with China represent the potent offensive element of the counterpunch. **These resources can be reinvested in other areas such as the private sector which, besides being the hallmark of American prosperity and thus the critical reason for protecting American power in the first place, has historically played a decisive role in the United States’ successful war efforts**. **Buoyed by a strong and vibrant private sector where the United States remains a desirable global hub for innovation and technology, the needed capabilities for war (or intense competition) can be adaptively produced and rapidly called forward to tip the competitive (or combative) scales towards victory when required.** Of course, the “punch” loses its effectiveness without clearly articulated triggers for employment. If China seeks to induce the United States into an uncontrolled arms race, then the current U.S. obsession with China—which seems to interpret every Chinese action in any sphere as a threat requiring a U.S. response—must be viewed as very encouraging in Beijing. An effective U.S. counterpunch requires clearly defined red lines that regulate and set behavior expectations between great powers and indicate when a Chinese competitive action warrants a U.S. response. Detractors of the counterpunch framework will immediately note the call for military restraint and interpret it as a reactive recipe for military weakness at precisely a time requiring proactive military strength. But military restraint does not imply weakness any more than eating fewer calories implies malnutrition. It simply means making smarter decisions that play to U.S. strengths and away from Chinese strategy. It also entails properly viewing the risks inherent in competition with China. The counterpunch skeptic incorrectly perceives greater risks in short-term military restraint (traded for economic investment and fortification) than in long-term arms races (traded for potential economic collapse). The counterpunch skeptic also fails to appreciate the United States’ historic strengths in adopting this approach. In fact, **America has demonstrated exceptional skill as an adaptive counter-puncher—reacting and adapting to adversity and setbacks to rise above them and create positive effects preserving U.S. power and ideas.** U.S. institutions have counter-punched their way to success in the political (from the failed Articles of Confederation to the Constitution), social (from abhorrent slavery to civil rights), and military (from disastrous Pearl Harbor to WWII victory) arenas to produce the stable and prosperous nation that exists today. As John Mearsheimer points out, **China has the population size and economic capacity (the “sinew of power”) to pose unique and unprecedented challenges to U.S. power**. Additionally, wasteful military exploits—often employed as a means of competing with rivals—have contributed to bringing down world powers again and again throughout history. China understands this apparent axiom and has woven its truth into its competitive strategy to displace the United States as the world’s preeminent power in the twenty-first century. U.S. competitive strategy against China must, therefore, resist the powerful (but seemingly prudent) urge to continually increase the stakes projecting power against China. Rather, the United States needs to adopt a disciplined counterpunch framework focused on protecting and preserving (not projecting) power. This **framework leverages the elements of a successful counterpunch: it demonstrates a superior understanding of adversary strategy (China’s desire to economically exhaust the United States with power projection), it leverages smart defensive elements (adopting only “enough” deterrence to influence China’s actions), and it fortifies conditions of economic strength to ensure offensive actions can be brought to bear when required in competition or conflict (re-investing resources into a globally-leading private sector).** Employing a counterpunch framework asks Americans to trust its institutions—which is a difficult task in the face of a rising China. But the ask is not for blind trust. As a country with less than one-sixth of the world’s population, **the United States as a superpower has been punching above its weight for decades and has historically counter-punched successfully to muster adaptive and superlative responses whenever challenged with adversity. America must follow these historical impulses to remain a superpower in the twenty-first century**.

#### The 1AC’s reduction of IPP for COVID-19 vaccines is America “handing over its crown jewels” to competing nations by disincentivizing record setting innovation that causes spillover to other fields and destroys American hegemony.

**Iancu 8/11** [Andrei, American-Romanian engineer and intellectual property attorney, who served as the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office from 2017 to 2021, “Biden is trying to undermine America's world-leading IP protections”, https://m.washingtontimes.com/news/2021/aug/11/biden-is-trying-to-undermine-americas-world-leadin/]//pranav

In May of this year, the Biden administration announced its support for a proposal at the World Trade Organization that would allow other countries to seize American intellectual property on COVID-19 technologies, including vaccines. On cue, those countries promptly modified their ask. **Whereas the original proposal called for the waiver to last a limited number of years, the new proposal makes the waiver effectively permanent.** And why not? **If America is willing to hand over its crown jewels, it might as well demand to keep them forever.** As a former Director of the U.S. Patent and Trademark Office, I know that America’s world-leading IP protections laid the foundation for our economic success and technological prowess. And as an immigrant from a communist nation, **I know all too well how disrespect for private property rights undermines innovation and saps economic vitality.** Since the Founding Fathers, Americans have understood that private property extends well beyond land, buildings, factories, and machines. **The real source of America’s power and promise are ideas. Walls, locks, or guards can protect physical property, but the implementation of ideas — new songs, artificial intelligence, or medicines — requires special protections and trust in the rule of law**. That’s why the Founders included intellectual property rights in the Constitution — in the form of an “exclusive right” for authors and inventors — to “promote the progress of science and useful arts.” Indeed, this is the only time the word “right” appears in the Constitution (amendments aside). The Founders knew that only the rule of law, and our respect for it, can protect and enable the development of these ideas. Yet, President Biden undermined that respect by signaling his support for the appropriation of America’s intangible assets. In doing so, he jeopardized America’s uniquely successful intellectual property system. The history of our nation — indeed, much of the history of the world — **since 1789 has been the revolution in knowledge led by American ingenuity in agriculture, industry, medicine, and information technology. Progress like this does not just happen**. Indeed, it didn’t, for the millennia of the entire human history until our nation’s founding a couple of hundred years ago! **It’s not a coincidence that the last two centuries of uninterrupted, IP-driven innovation — up to and including the miraculous creation in a record time of the Covid vaccines themselves — began when one nation finally committed itself to protect intangible assets as much as physical property.** The reason is simple: knowledge is cumulative. **Every new discovery becomes the basis for new research. The revolutionary mRNA technology behind Pfizer and Moderna’s vaccines is, in fact, an evolutionary iteration of previous — patented — breakthroughs over the last two decades.** Sen. Bernie Sanders, among others, turns up his nose at all this science, history, and progress. Like President Biden, he supports waiving vaccine patents because, he says, “We need a people’s vaccine, not a profit vaccine.” **Ignore for a moment that many companies have agreed to sell their vaccines at non-profit prices for the duration of the pandemic, or that the vaccines are completely free for all patients at pharmacies nationwide, or that the federal government pays $19.50 per Pfizer dose, about $15 per Moderna dose, and $10 for the Johnson & Johnson shot — less than the cost of a pizza for medicines that are saving millions of lives and restoring our economy.** Instead, **focus on the fact that intellectual property protections enabled the creation of “people’s vaccines” in the first place.** **The choice isn’t between cheap vaccines and even cheaper vaccines — it’s between shots that are protected by strong IP laws or no shots at all.** The same goes for every industry. **If President Biden doesn’t protect the IP behind new vaccines, investors and inventors will ask, what other technologies are next?** Will similar takings be imposed on climate change technologies, for example? Food processing? Essential semiconductor technologies? **Companies will scale back investments in medical devices, microchips, energy, and everything in between if they think the U.S. Government might waive IP protection after the fact so that others may copy their inventions with impunity.** Of immediate concern is the need for more treatments for Covid-19, especially as the pandemic keeps raging with new variants. **Knowing that their IP may be appropriated as soon as it is developed, private industry — especially start-ups and smaller businesses that depend heavily on outside capital — may not invest the resources necessary to develop these new technologies that are desperately needed right now.** Here’s the reality: **remove patents and other forms of intellectual property, and private-sector investment in innovation dries up**. The government will then try to step in to fill the gap, inefficiently as always. **Like the taking of factories to nationalize industry, this taking of intellectual property is effectively the nationalization of our innovation economy**. The result will be the same as in every other socialist regime that nationalized its industries: the kind of poverty, corruption, and misery that my family escaped from decades ago. **American innovation** has cured diseases, enabled human flight, led to the development of computers, and **made our nation the envy of the world. Waiving intellectual property rights could forfeit it all.**

#### Only U.S. hegemony prevents global instability---alternatives can't maintain peace

**Haass, 17** - President of the Council on Foreign Relations (Richard, "Who Will Fill America’s Shoes?," *Project Syndicate*, 6-24-2017, https://www.project-syndicate.org/commentary/global-leadership-successor-to-america-by-richard-n--haass-2017-06)

Still, a shift away from a US-dominated world of structured relationships and standing institutions and toward something else is under way. What this alternative will be, however, remains largely unknowable. What we do know is that **there is no alternative great power willing and able to step in and assume what had been the US role**.

China is a frequently mentioned candidate, but its leadership is focused mostly on consolidating domestic order and maintaining artificially high economic-growth rates to stave off popular unrest. China’s interest in regional and global institutions seems designed mostly to bolster its economy and geopolitical influence, rather than to help set rules and create broadly beneficial arrangements.

Likewise, Russia is a country with a narrowly-based economy led by a government focused on retaining power at home and re-establishing Russian influence in the Middle East and Europe. India is preoccupied with the challenge of economic development and is tied down by its problematic relationship with Pakistan. Japan is held back by its declining population, domestic political and economic constraints, and its neighbors’ suspicions.

Europe, for its part, is distracted by questions surrounding the relationship between member states and the European Union. As a result, the whole of the continent is less than the sum of its parts – **none** of which **is large enough to succeed America on the world stage**.

But the absence of a single successor to the US does not mean that what awaits is chaos. At least in principle, the world’s most powerful countries could come together to fill America’s shoes. In practice, though, **this will not happen**, as these countries lack the capabilities, experience, and, above all, a consensus on what needs doing and who needs to do it.

#### Hegemony is good – checks revisionism, terrorism, and global war

Kagan 17 [Robert Kagan is senior fellow at the Brookings Institution and the author of The World America Made, “Backing Into World War III,” 2/6/17, <https://foreignpolicy.com/2017/02/06/backing-into-world-war-iii-russia-china-trump-obama/>] sg

Think of two significant trend lines in the world today. One is the increasing ambition and activism of the two great revisionist powers, Russia and China. The other is the declining confidence, capacity, and will of the democratic world, and especially of the United States, to maintain the dominant position it has held in the international system since 1945. As those two lines move closer, as the declining will and capacity of the United States and its allies to maintain the present world order meet the increasing desire and capacity of the revisionist powers to change it, we will reach the moment at which the existing order collapses and the world descends into a phase of brutal anarchy, as it has three times in the past two centuries. The cost of that descent, in lives and treasure, in lost freedoms and lost hope, will be staggering. Where exactly we are in this classic scenario today, how close the trend lines are to that intersection point is, as always, impossible to know. Are we three years away from a global crisis, or 15? Americans tend to take the fundamental stability of the international order for granted, even while complaining about the burden the United States carries in preserving that stability. History shows that world orders do collapse, however, and when they do it is often unexpected, rapid, and violent. The late 18th century was the high point of the Enlightenment in Europe, before the continent fell suddenly into the abyss of the Napoleonic Wars. In the first decade of the 20th century, the world’s smartest minds predicted an end to great-power conflict as revolutions in communication and transportation knit economies and people closer together. The most devastating war in history came four years later. The apparent calm of the postwar 1920s became the crisis-ridden 1930s and then another world war. Where exactly we are in this classic scenario today, how close the trend lines are to that intersection point is, as always, impossible to know. Are we three years away from a global crisis, or 15? That we are somewhere on that path, however, is unmistakable. And while it is too soon to know what effect Donald Trump’s presidency will have on these trends, early signs suggest that the new administration is more likely to hasten us toward crisis than slow or reverse these trends. The further accommodation of Russia can only embolden Vladimir Putin, and the tough talk with China will likely lead Beijing to test the new administration’s resolve militarily. Whether the president is ready for such a confrontation is entirely unclear. For the moment, he seems not to have thought much about the future ramifications of his rhetoric and his actions. **China and Russia are classic revisionist powers**. Although both have never enjoyed greater security from foreign powers than they do today — Russia from its traditional enemies to the west, China from its traditional enemy in the east — they are dissatisfied with the current global configuration of power. Both seek to restore the hegemonic dominance they once enjoyed in their respective regions. For China, that means dominance of East Asia, with countries like Japan, South Korea, and the nations of Southeast Asia both acquiescing to Beijing’s will and acting in conformity with China’s strategic, economic, and political preferences. That includes American influence withdrawn to the eastern Pacific, behind the Hawaiian Islands. For Russia, it means hegemonic influence in Central and Eastern Europe and Central Asia, which Moscow has traditionally regarded as either part of its empire or part of its sphere of influence. Both Beijing and Moscow seek to redress what they regard as an unfair distribution of power, influence, and honor in the U.S.-led postwar global order. As autocracies, both feel threatened by the dominant democratic powers in the international system and by the democracies on their borders. Both regard the United States as the principal obstacle to their ambitions, and therefore both seek to weaken the American-led international security order that stands in the way of their achieving what they regard as their rightful destinies. President Xi Jinping makes a speech during the opening ceremony of the G20 Leaders Summit as President Barack Obama, left, and President Vladimir Putin, right, listen on Sept. 4, 2016 in Hangzhou, China. (Photo credit: NICOLAS ASFOURI - Pool/Getty Images) It was good while it lasted Until fairly recently, Russia and China have faced considerable, almost insuperable, obstacles in achieving their objectives. The chief obstacle has been the power and coherence of the international order itself and its principal promoter and defender. The American-led system of political and military alliances, especially in the two critical regions of Europe and East Asia, has presented China and Russia with what Dean Acheson once referred to as “situations of strength” that have required them to pursue their ambitions cautiously and, since the end of the Cold War, to defer serious efforts to disrupt the international system. During the era of American primacy, China and Russia have participated in and for the most part been beneficiaries of the open international economic system the United States created and helps sustain; **so long as that system functions, they have had more to gain by playing in it than by challenging and overturning it.** The system has checked their ambitions in both positive and negative ways. During the era of American primacy, China and Russia have participated in and for the most part been beneficiaries of the open international economic system the United States created and helps sustain; so long as that system functions, they have had more to gain by playing in it than by challenging and overturning it. The political and strategic aspects of the order, however, have worked to their detriment. The growth and vibrancy of democratic government in the two decades following the collapse of Soviet communism posed a continual threat to the ability of rulers in Beijing and Moscow to maintain control, and since the end of the Cold War they have regarded every advance of democratic institutions — especially the geographical advance of liberal democracies close to their borders — as an existential threat. That’s for good reason: Autocratic powers since the days of Klemens von Metternich have always feared the contagion of liberalism. The mere existence of democracies on their borders, the global free flow of information they cannot control, the dangerous connection between free market capitalism and political freedom — all pose a threat to rulers who depend on keeping restive forces in their own countries in check. The continual challenge to the legitimacy of their rule posed by the U.S.-supported democratic order has therefore naturally made them hostile both to that order and to the United States. But, until recently, a preponderance of domestic and international forces has dissuaded them from confronting the order directly. Chinese rulers have had to worry about what an unsuccessful confrontation with the United States might do to their legitimacy at home. Even Putin has pushed only against open doors, as in Syria, where the United States responded passively to his probes. He has been more cautious when confronted by even marginal U.S. and European opposition, as in Ukraine. **The greatest check on Chinese and Russian ambitions has been the military and economic power of the United States** and its allies in Europe and Asia. China, although increasingly powerful, has had to contemplate facing the combined military and economic strength of the world’s superpower and some very formidable regional powers linked by alliance or common strategic interest — including Japan, India, and South Korea, as well as smaller but still potent nations like Vietnam and Australia. Russia has had to face the United States and its NATO allies. When united, these U.S.-led alliances present a daunting challenge to a revisionist power that can call on few allies of its own for assistance. Even were the Chinese to score an early victory in a conflict, such as the military subjection of Taiwan or a naval battle in the South or East China Sea, they would have to contend over time with the combined industrial productive capacities of some of the world’s richest and most technologically advanced nations and the likely cutoff of access to foreign markets on which their own economy depends. A weaker Russia, with its depleted population and oil- and gas-dependent economy, would face an even greater challenge. For decades, the strong global position enjoyed by the United States and its allies has discouraged any serious challenge. So long as the United States was perceived as a dependable ally, Chinese and Russian leaders feared that aggressive moves would backfire and possibly bring their regimes down. This is what the political scientist William Wohlforth once described as the inherent stability of the unipolar order: As dissatisfied regional powers sought to challenge the status quo, their alarmed neighbors turned to the distant American superpower to contain their ambitions. And it worked. The United States stepped up, and Russia and China largely backed down — or were preempted before acting at all. Faced with these obstacles, the best option for the two revisionist great powers has always been to hope for or, if possible, engineer a weakening of the U.S.-supported world order from within, either by separating the United States from its allies or by raising doubts about the U.S. commitment and thereby encouraging would-be allies and partners to forgo the strategic protection of the liberal world order and seek accommodation with its challengers. The present system has therefore depended not only on American power but on coherence and unity at the heart of the democratic world. The United States has had to play its part as the principal guarantor of the order, especially in the military and strategic realm, but the order’s ideological and economic core — the democracies of Europe and East Asia and the Pacific — has also had to remain relatively healthy and confident. In recent years, both pillars have been shaken. The democratic order has weakened and fractured at its core**. Difficult economic conditions, the recrudescence of nationalism and tribalism, weak and uncertain political leadership and unresponsive mainstream political parties, and a new era of communications that seems to strengthen** rather than weaken **tribalism** **have** together **produced a crisis of confidence** not only in the democracies but in what might be called the liberal enlightenment project. That project elevated universal principles of individual rights and common humanity over ethnic, racial, religious, national, or tribal differences. It looked to a growing economic interdependence to create common interests across boundaries and to the establishment of international institutions to smooth differences and facilitate cooperation among nations. Instead, the past decade has seen the rise of tribalism and nationalism, an increasing focus on the Other in all societies, and a loss of confidence in government, in the capitalist system, and in democracy. We are witnessing the opposite of Francis Fukuyama’s “end of history.” History is returning with a vengeance and with it all the darker aspects of the human soul, including, for many, the perennial human yearning for a strong leader to provide firm guidance in a time of confusion and incoherence. Left: Adolf Hitler and his staff salute teams during the opening ceremonies of the XI Olympic Games on Aug. 1, 1936 in Berlin. (Photo credit: Getty Images) Right: Former British Prime minister Winston Churchill, President Franklin Roosevelt and USSR Secretary General of the Soviet Communist Party Joseph Stalin pose at the Conference of the Allied powers in Yalta, Crimea, on Feb. 4, 1945. (Photo credit: AFP/Getty Images) The Dark Ages 2.0 This crisis of the enlightenment project may have been inevitable, a recurring phenomenon produced by inherent flaws in both capitalism and democracy. In the 1930s, economic crisis and rising nationalism led many to doubt whether either democracy or capitalism was preferable to alternatives such as fascism and communism. And it is no coincidence that the crisis of confidence in liberalism accompanied a simultaneous breakdown of the strategic order. Then, the question was whether the United States as the outside power would step in and save or remake an order that Britain and France were no longer able or willing to sustain. Now, the question is whether the United States is willing to continue upholding the order that it created and which depends entirely on American power or whether Americans are prepared to take the risk — if they even understand the risk — of letting the order collapse into chaos and conflict.

## Case

No covid extinction -

#### Diseases don’t cause extinction

Owen Cotton-**Barratt 17**, 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

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

#### Rigorous climate simulations prove that hydrophilic black carbon would cause to atmospheric precipitation – results in a rainout effect that quickly reverses nuclear cooling

Reisner et al. 18 (Jon Reisner – Climate and atmospheric scientist at the Los Alamos National Laboratory. Gennaro D’Angelo – Climate scientist at the Los Alamos National Laboratory, Research scientist at the SETI institute, Associate specialist at the University of California, Santa Cruz, NASA Postdoctoral Fellow at the NASA Ames Research Center, UKAFF Fellow at the University of Exeter. Eunmo Koo - Scientist at Applied Terrestrial, Energy, and Atmospheric Modeling (ATEAM) Team, in Computational Earth Science Group (EES-16) in Earth and Environmental Sciences Division and Co-Lead of Parallel Computing Summer Research Internship (PCSRI) program at the Los Alamos National Laboratory, former Staff research associate at UC Berkeley. Wesley Even - Computational scientist in the Computational Physics and Methods Group at Los Alamos National Laboratory. Matthew Hecht – Atmospheric scientist at the Los Alamos National Laboratory. Elizabeth Hunke - Lead developer for the Los Alamos Sea Ice Model (CICE) at the Los Alamos National Laboratory responsible for development and incorporation of new parameterizations, model testing and validation, computational performance, documentation, and consultation with external model users on all aspects of sea ice modeling, including interfacing with global climate and earth system models. Darin Comeau – Climate scientist at the Los Alamos National Laboratory. Randy Bos - Project leader at the Los Alamos National Laboratory, former Weapons Effects program manager at Tech-Source. James Cooley – Computational scientist at the Los Alamos National Laboratory specializing in weapons physics, emergency response, and computational physics. <MKIM> “Climate impact of a regional nuclear weapons exchange:An improved assessment based on detailed source calculations”. 3/16/18. DOA: 7/13/19. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017JD027331>)

\*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**. 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.**

#### Even if there’s no rainout, no famine – plenty of foods can survive the conditions

Bendix 20 (Aria Bendix is a Senior Reporter at Insider, covering urban and environmental science, A full-scale nuclear winter would trigger a global famine. A disaster expert put together a doomsday diet to save humanity, Jan 10, 2020, BuisnessInsider, <https://www.businessinsider.com/how-to-survive-after-nuclear-war-what-to-eat-2020-1>, 3/24/20)//ww BJ

Even if a nuclear winter destroyed trillions of trees, mushrooms could feed on that dead matter, creating a regenerative food source that could potentially feed everyone on the planet for about three years, according to Denkenberger's estimates. Since mushrooms don't rely on photosynthesis, they can survive without much light. The same goes for seaweed. "Seaweed is a really good food source in a scenario like this because it can tolerate a low light levels," Denkenberger said. "It's also very fast-growing. In a nuclear winter, the land will cool down faster than the oceans, so the oceans will remain a little bit warmer. Seaweed can handle relatively low temperatures." To feed everyone on the planet, Denkenberger estimates that the world would need around 1.6 billion tons of dry food per year. Humans could potentially grow that amount of seaweed, he said, in three to six months. But in order consume the proper nutrients to ward off disease, humans can't rely on a single food source (or two). So Denkenberger put together a chart of what a typical 2,100-calorie diet might look like in a post-doomsday scenario. nuclear winter diet David Denkenberger and Joshua M. Pearce The diet involves a mixture of meat, eggs, sugar, and mushrooms. It also includes dandelions and tea made from tree needles, which contain Vitamin C. Naturally growing bacteria would serve as a source of Vitamin E, which is important for brain function. Denkenberger said he plans to study other natural food sources that could grow near the equator, where there would still be some sunlight post-disaster (though the temperature would be low). "One of the things I've learned by moving to Alaska is that, even in areas where the summers are so cool that trees cannot grow, you can actually grow potatoes," he said. Leaves also contain stringy fiber (cellulose) that could be converted into sugar, Denkenberger added. That process is already happening at biofuel plants, which convert cellulose into sugar to make ethanol.

#### Nuke war won’t cause extinction— BUT, it’ll spur political will for meaningful disarmament.

Daniel 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. //reem

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.

#### Extinction is inevitable from future technology — nanotech, our simulation gets shut down, AI, biotech, particle accelerators, and black swans

Bruce Sterling 18, 6-1-20**18**, "When Nick Bostrom says “Bang”," WIRED, <https://www.wired.com/beyond-the-beyond/2018/06/nick-bostrom-says-bang/>

\*We do not endorse the author’s language\*

4.1 Deliberate misuse of nanotechnology In a mature form, molecular nanotechnology will enable the construction of bacterium-scale self-replicating mechanical robots that can feed on dirt or other organic matter [22-25]. Such replicators could eat up the biosphere or destroy it by other means such as by poisoning it, burning it, or blocking out sunlight. A person of malicious intent in possession of this technology might cause the extinction of intelligent life on Earth by releasing such nanobots into the environment.[9] The technology to produce a destructive nanobot seems considerably easier to develop than the technology to create an effective defense against such an attack (a global nanotech immune system, an “active shield” [23]). It is therefore likely that there will be a period of vulnerability during which this technology must be prevented from coming into the wrong hands. Yet the technology could prove hard to regulate, since it doesn’t require rare radioactive isotopes or large, easily identifiable manufacturing plants, as does production of nuclear weapons [23]. Even if effective defenses against a limited nanotech attack are developed before dangerous replicators are designed and acquired by suicidal regimes or terrorists, there will still be the danger of an arms race between states possessing nanotechnology. It has been argued [26] that molecular manufacturing would lead to both arms race instability and crisis instability, to a higher degree than was the case with nuclear weapons. Arms race instability means that there would be dominant incentives for each competitor to escalate its armaments, leading to a runaway arms race. Crisis instability means that there would be dominant incentives for striking first. Two roughly balanced rivals acquiring nanotechnology would, on this view, begin a massive buildup of armaments and weapons development programs that would continue until a crisis occurs and war breaks out, potentially causing global terminal destruction. That the arms race could have been predicted is no guarantee that an international security system will be created ahead of time to prevent this disaster from happening. The nuclear arms race between the US and the USSR was predicted but occurred nevertheless. 4.2 Nuclear holocaust[winter] The US and Russia still have huge stockpiles of nuclear weapons. But would an all-out nuclear war really exterminate humankind? Note that: (i) For there to be an existential risk it suffices that we can’t be sure that it wouldn’t. (ii) The climatic effects of a large nuclear war are not well known (there is the possibility of a nuclear winter). (iii) Future arms races between other nations cannot be ruled out and these could lead to even greater arsenals than those present at the height of the Cold War. The world’s supply of plutonium has been increasing steadily to about two thousand tons, some ten times as much as remains tied up in warheads ([9], p. 26). (iv) Even if some humans survive the short-term effects of a nuclear war, it could lead to the collapse of civilization. A human race living under stone-age conditions may or may not be more resilient to extinction than other animal species. 4.3 We’re living in a simulation and it gets shut down A case can be made that the hypothesis that we are living in a computer simulation should be given a significant probability [27]. The basic idea behind this so-called “Simulation argument” is that vast amounts of computing power may become available in the future (see e.g. [28,29]), and that it could be used, among other things, to run large numbers of fine-grained simulations of past human civilizations. Under some not-too-implausible assumptions, the result can be that almost all minds like ours are simulated minds, and that we should therefore assign a significant probability to being such computer-emulated minds rather than the (subjectively indistinguishable) minds of originally evolved creatures. And if we are, we suffer the risk that the simulation may be shut down at any time. A decision to terminate our simulation may be prompted by our actions or by exogenous factors. While to some it may seem frivolous to list such a radical or “philosophical” hypothesis next the concrete threat of nuclear holocaust, we must seek to base these evaluations on reasons rather than untutored intuition. Until a refutation appears of the argument presented in [27], it would intellectually dishonest to neglect to mention simulation-shutdown as a potential extinction mode. 4.4 Badly programmed superintelligence When we create the first superintelligent entity [28-34], we might make a mistake and give it goals that lead it to annihilate humankind, assuming its enormous intellectual advantage gives it the power to do so. For example, we could mistakenly elevate a subgoal to the status of a supergoal. We tell it to solve a mathematical problem, and it complies by turning all the matter in the solar system into a giant calculating device, in the process killing the person who asked the question. (For further analysis of this, see [35].) 4.5 Genetically engineered biological agent With the fabulous advances in genetic technology currently taking place, it may become possible for a tyrant, terrorist, or ~~lunatic~~ to create a doomsday virus, an organism that combines long latency with high virulence and mortality [36]. Dangerous viruses can even be spawned unintentionally, as Australian researchers recently demonstrated when they created a modified mousepox virus with 100% mortality while trying to design a contraceptive virus for mice for use in pest control [37]. While this particular virus doesn’t affect humans, it is suspected that an analogous alteration would increase the mortality of the human smallpox virus. What underscores the future hazard here is that the research was quickly published in the open scientific literature [38]. It is hard to see how information generated in open biotech research programs could be contained no matter how grave the potential danger that it poses; and the same holds for research in nanotechnology. Genetic medicine will also lead to better cures and vaccines, but there is no guarantee that defense will always keep pace with offense. (Even the accidentally created mousepox virus had a 50% mortality rate on vaccinated mice.) Eventually, worry about biological weapons may be put to rest through the development of nanomedicine, but while nanotechnology has enormous long-term potential for medicine [39] it carries its own hazards. 4.6 Accidental misuse of nanotechnology (“gray goo”) The possibility of accidents can never be completely ruled out. However, there are many ways of making sure, through responsible engineering practices, that species-destroying accidents do not occur. One could avoid using self-replication; one could make nanobots dependent on some rare feedstock chemical that doesn’t exist in the wild; one could confine them to sealed environments; one could design them in such a way that any mutation was overwhelmingly likely to cause a nanobot to completely cease to function [40]. Accidental misuse is therefore a smaller concern than malicious misuse [23,25,41]. However, the distinction between the accidental and the deliberate can become blurred. While “in principle” it seems possible to make terminal nanotechnological accidents extremely improbable, the actual circumstances may not permit this ideal level of security to be realized. Compare nanotechnology with nuclear technology. From an engineering perspective, it is of course perfectly possible to use nuclear technology only for peaceful purposes such as nuclear reactors, which have a zero chance of destroying the whole planet. Yet in practice it may be very hard to avoid nuclear technology also being used to build nuclear weapons, leading to an arms race. With large nuclear arsenals on hair-trigger alert, there is inevitably a significant risk of accidental war. The same can happen with nanotechnology: it may be pressed into serving military objectives in a way that carries unavoidable risks of serious accidents. In some situations it can even be strategically advantageous to deliberately make one’s technology or control systems risky, for example in order to make a “threat that leaves something to chance” [42]. 4.7 Something unforeseen We need a catch-all category. It would be foolish to be confident that we have already imagined and anticipated all significant risks. Future technological or scientific developments may very well reveal novel ways of destroying the world. Some foreseen hazards (hence not members of the current category) which have been excluded from the list of bangs on grounds that they seem too unlikely to cause a global terminal disaster are: solar flares, supernovae, black hole explosions or mergers, gamma-ray bursts, galactic center outbursts, supervolcanos, loss of biodiversity, buildup of air pollution, gradual loss of human fertility, and various religious doomsday scenarios. The hypothesis that we will one day become “illuminated” and commit collective suicide or stop reproducing, as supporters of VHEMT (The Voluntary Human Extinction Movement) hope [43], appears unlikely. If it really were better not to exist (as Silenus told king Midas in the Greek myth, and as Arthur Schopenhauer argued [44] although for reasons specific to his philosophical system he didn’t advocate suicide), then we should not count this scenario as an existential disaster. The assumption that it is not worse to be alive should be regarded as an implicit assumption in the definition of Bangs. Erroneous collective suicide is an existential risk albeit one whose probability seems extremely slight. (For more on the ethics of human extinction, see chapter 4 of [9].) 4.8 Physics disasters The Manhattan Project bomb-builders’ concern about an A-bomb-derived atmospheric conflagration has contemporary analogues. There have been speculations that future high-energy particle accelerator experiments may cause a breakdown of a metastable vacuum state that our part of the cosmos might be in, converting it into a “true” vacuum of lower energy density [45]. This would result in an expanding bubble of total destruction that would sweep through the galaxy and beyond at the speed of light, tearing all matter apart as it proceeds. Another conceivability is that accelerator experiments might produce negatively charged stable “strangelets” (a hypothetical form of nuclear matter) or create a mini black hole that would sink to the center of the Earth and start accreting the rest of the planet [46]. These outcomes seem to be impossible given our best current physical theories. But the reason we do the experiments is precisely that we don’t really know what will happen. A more reassuring argument is that the energy densities attained in present day accelerators are far lower than those that occur naturally in collisions between cosmic rays [46,47]. It’s possible, however, that factors other than energy density are relevant for these hypothetical processes, and that those factors will be brought together in novel ways in future experiments. The main reason for concern in the “physics disasters” category is the meta-level observation that discoveries of all sorts of weird physical phenomena are made all the time, so even if right now all the particular physics disasters we have conceived of were absurdly improbable or impossible, there could be other more realistic failure-modes waiting to be uncovered. The ones listed here are merely illustrations of the general case.

#### Nuclear war solves global warming

Choi 11. Charles Q. Choi, correspondent for National Geographic, February 22nd 2011[“Small Nuclear War Could Reverse Global Warming For Years”, [http://news.nationalgeographic.com/news/2011/02/110223-nuclear-war-winter-global-warming-environment-science-climate-change/]](http://news.nationalgeographic.com/news/2011/02/110223-nuclear-war-winter-global-warming-environment-science-climate-change/%5dJD)

To see what climate effects such **a** regionalnuclear conflictmight have, scientists from NASA and other institutions modeled a war involving a hundred Hiroshima-level bombs, each packing the equivalent of 15,000 tons of TNT—just 0.03 percent of the world's current nuclear arsenal. The researchers predictedthe resulting fires would kick up five million metric tons of black carbon into theupper part of the troposphere, the lowest layer of the Earth's atmosphere.In NASA climate models, this carbon then absorbed [solar heat](http://news.nationalgeographic.com/news/2011/02/110223-nuclear-war-winter-global-warming-environment-science-climate-change/) and, like a hot-air balloon, quickly lofted even higher, where the soot would take much longer to clear from the sky. The global cooling [created]caused by these high carbon clouds wouldn't be as catastrophic as a superpower-versus-superpower nuclear winter, but "the effects would still be regarded as leading to unprecedented climate change," research physical scientist [Luke Oman](http://acdb-ext.gsfc.nasa.gov/People/Oman/) said during a press briefing Friday at a [meeting of the American Association for the Advancement of Science](http://www.aaas.org/meetings/) in Washington, D.C. Earth is currently in a [long-term warming trend](http://news.nationalgeographic.com/news/2009/12/091208-copenhagen-climate-conference-global-warming-climategate.html). After a regional nuclear war, though, average global temperatures would drop by 2.25 degrees **F** (1.25 degrees C) for two to three years afterward, the models suggest.