## 1NC

## 1

**Interpretation: Aff debaters must send case thirty minutes before the round.**

**Violation – They didn’t send their case thirty minutes before round.**

**Standards:**

**a] predictability –Sending the case thirty minutes before or open sourcing allows me to have an idea about the args that will be read. Predictability is key to education because in round clash can be maximized when the arguments are known beforehand. Clash increases education which is the purpose of debate.**

**b] reciprocity – I send the case 30 minutes before when asked. It harms fairness if I contribute to the norm, and they do not.**

#### They’ll say they don’t have to disclose if they are breaking new, but insofar as we can maximize education from disclosing it’s a reason to vote them down. Not disclosing incentivizes breaking new every round which always keeps the neg in the dark this always decks education.

**Voters:**

**a]. Education is a voter because education is the goal and purpose of debate. Education furthers life skills and thus must be protected.**

**b]. Fairness is a voter because debate is a competition, so protecting fairness in the round is key.**

**It’s drop the debater – a] deter future abuse and b] set better norms for debate c] indicts the debater d] time investment**

**Competing interps – [a] reasonability is arbitrary and encourages judge intervention since there’s no clear norm, [b] it creates a race to the top where we create the best possible norms for debate.**

**No RVIs – a] illogical, you don’t win for proving that you meet the burden of being fair, logic outweighs since it’s a prerequisite for evaluating any other argument, b] RVIs incentivize baiting theory and prepping it out which leads to maximally abusive practices c] you can’t win for having good disclosure practices, d] chills the checking of abuse**

### Framework

#### First, this debate is not a question of whether objectivity as an ideal is good – it’s about whether objectivity should be the guiding principle. Advocacy does not mean nonresponsiveness to truth; rather, you are bringing your best judgement and the things you think are valuable to shape reporting.

#### Second, the aff may show objectivity is important but that does not show the free press as a whole ought to prioritize it. For example, in the UK, the BBC has hard objectivity guidelines and they’re publicly funded, providing a universal source of information while the rest of the free press is advocacy.

#### First, only a press that accepts opposing views can ever be open to radical revision – other systems insist on their own foundation and can’t accommodate changing views that make them exclusionary or illegitimate.

#### Second, enabling the acceptance of views is key to maintaining legitimacy and freedom. Otherwise, political institutions can always silence opposition, violating freedom and democracy.

#### Contention 1: subjectivity

#### First, even if we achieve something approximating objectivity, there will be a bias in terms of what they choose to report. This agenda setting power has no objective metric that’s not dependent on who is assessing what to report. Therefore, appeals to objectivity will always hide the real biases. Forefronting advocacy ensure the public knows what those biases are. This makes the process a shared conversation which is easier to validate.

#### Second, democracy as a procedure should never appeal to the idea objectivity. there’s no correct idea of democracy, so only advocacy instead of fake objectivity is legitimate – it opens up spaces for diverse interpretations, Political theorist Chantal Mouffe writes in 2000:

Chantal Mouffe, [Chantal Mouffe (French: [muf]; born 17 June 1943)[1] is a Belgian political theorist, formerly teaching at University of Westminster.[2] She is best known for her contribution to the development—jointly with Ernesto Laclau, with whom she co-authored Hegemony and Socialist Strategy—of the so-called Essex School of discourse analysis,[3][4] a type of post-Marxist political inquiry drawing on Gramsci, post-structuralism and theories of identity, and redefining Leftist politics in terms of radical democracy. Her highest cited publication is Hegemony and Socialist Strategy: Towards a Radical Democratic Politics.[5] She is also the author of influential works on agonistic political theory, including Agonistics: Thinking the World Politically and The Democratic Paradox.] 2000, “The Democratic Paradox” //LHP AV

I submit that this is a crucial insight which undermines the very objective that those who advocate the 'deliberative' approach present as the aim of democracy: the establishment of a rational consensus on universal principles. They believe that through rational deliberation an impartial standpoint could be reached where decisions would be taken that arc equally in the interests of all." Wittgenstein, on the contrary, suggests another view. If we follow his lead, **we should acknowledge and valorize the diversity of ways in which the 'democratic game' can be played**, instead of trying to reduce this diversity to a uniform model of citizenship**. This would mean fostering a plurality of forms of being a democratic citizen and creating the institutions that would make it possible to follow the democratic rules in a plurality of ways**. What Wittgenstein teaches us is that **there cannot be one single best**, more 'rational' **way to obey those rules and that it is precisely such a recognition that is constitutive of a pluralist democracy.** **'Following a rule'**, says Wittgenstein, **'is analogous to obeying an order**. **We are trained to do so**; we react to an order in a particular way. **But what if one person reacts in one way and another in another to the order and the training? Which one is right?**'" **This is** indeed a **crucial** question **for democratic theory**. **And it cannot be resolved**, pace the rationalists, **by claiming that there is a correct understanding of the rule** that every rational person should accept. To be sure, we need to be able to distinguish between 'obeying the rule' and 'going against it'. But **space needs to be provided for the many different practices in which obedience to the democratic rules can be inscribed**. And **this** **should** not **be envisaged** as a tempor-ary accommodation, as a stage in the process leading to the 73 THE DEMOCRATIC PARADOX realization of the rational consensus, but **as a constitutive feature of a democratic society**. **Democratic citizenship can take many diverse forms and such a diversity, far from being a danger for democracy, is in fact its very condition of existence**. This will, of course, create conflict and it would be a mistake to expect all those different understandings to coexist without clashing. But **this struggle will not be one between 'enemies' but among 'adversaries', since all participants will recognize the positions of the others in the contest as legitimate ones**. Such an understand-ing of democratic politics, which is precisely what I call **'agonis-tic pluralism'**, is unthinkable within a rationalistic problematic which, by necessity, tends to erase diversity. A perspective inspired by Wittgenstein, on the contrary, can contribute to its formulation, and this is why his contribution to democratic thinking is invaluable.

#### Contention 2 is social justice

#### First, if objectivity is prioritized, it’s unfair and will always targets minorities as their “objectivity” is always in question, Williams 20:

Williams, Kat. “Objectivity In Journalism: Ethical Requirement Or Impediment?.” The University of Texas at Austin, Center for Media Engagement. July 15, 2020. Web. Accessed February 12, 2022. <https://mediaengagement.org/wp-content/uploads/2020/07/85-Objectivity-in- News-Case-Study.pdf>.

In contrast, there are those who believe strict **objectivity should not be a priority in journalism**. On a philosophical level, it has been argued that neutrality or **objectivity** in judgment **doesn’t actually exist and therefore is an impossible standard to meet.** Regardless of their profession, **reporters are still human beings who have unique experiences and stakes in political processes.** **To be held to a level of superhuman objectivity is unfair** for anyone, **but perhaps even more concerning for minority journalists reporting on issues that affect them directly**. **As trans reporter** Lewis **Wallace** has **argued**: “**I can’t be neutral** or centrist **in a debate over my own humanity**” (Li, 2020). **Even when news appears to be objective**, freelance writer Jack Mirkinson urges consumers to “look at the questions people ask [or] the stories people choose to write. **All of these things are inherently suffused with opinion and political judgment**” **even if the journalist doesn’t outright put forth their beliefs** (Li, 2020).

#### Second, the ideal of objectivity is not the neutral view from nowhere it claims to be – instead, it normalizes the status quo, preventing radical change, Raeijmaekers writes in 2017:

Raeijmaekers D, [Daniëlle Raeijmaekers, Department of Communication Studies, University of Antwerp] Maeseele P. In objectivity we trust? Pluralism, consensus, and ideology in journalism studies. Journalism. 2017;18(6):647-663. doi:10.1177/1464884915614244 //LHP AV DOA: March 4, 2022

By now, we have demonstrated that **the notion of objectivity is rooted within a paradigm of social consensus**, both socio-historically and analytically. Thus, the analysis of news media is taking place within a broader basic framework of consensus and within the conventional understandings6 of society: ‘It is not the vast pluralistic range of voices which the media are sometimes held to represent, but a range within certain distinct ideological limits’ (Hall et al., 1978: 59). In that sense, we can state that the ideal of **objectivity only allows for evaluating pluralism ‘within the box’, that is, within the limits of existing social consensus**. We start this paragraph by illustrating this using the popular concept of partisan media bias. Subsequently, we begin with a search for alternative analytical concepts that allow to evaluate journalism about and beyond the limits of social consensus (i.e. pluralism ‘outside the box’**). Since this implies moving from a conceptualization that premises social consensus to an approach that acknowledges ideological contestation, both in terms of its scope and form, the framework of de/politicization is put forward as a potential alternative**. From pluralism ‘within the box’ ... Although journalism research these days primarily starts from a post-ideological understanding of society, the notion of ideology is not absent in positivist empirical studies. Mostly, it is analyzed as ‘ideological bias’ or ‘partisan bias’ since ‘[i]t is partisan bias in the news which has attracted the most public interest and attention’ (D’Alessio and Allen, 2000: 134). The partisan media bias approach is characterized by quantitative content analyses into the extent of unbalanced and partisan political coverage, which is operationalized as the varying levels of attention for specific politicians, political parties, or policy positions in specific news outlets (Groeling, 2013; Groseclose and Milyo, 2005). However, such an approach allows media researchers to only gain insights about pluralism ‘within the box’. **To start with, the partisan bias approach adopts a limited understanding of ‘ideology’: it explicitly focuses on politicians, political parties, and exclusively politically driven issues, that is, the field of institutional politics. Quite revealing in this regard is the following motivation by D’Alessio and Allen (2000) in a paper reporting on a meta-analysis of studies on partisan media bias**: ‘Unlike opinions on the nature of the economy, where it would appear that there is a large preference among Americans for capitalism rather than communism, opinions on political matters are widely divergent’ (p. 134). Not only does this imply that the economy is excluded as a ‘political matter’ but also that the benchmark for evaluating the level of ideological pluralism in news coverage is dependent on the ideological divergence between political parties. **Moreover, this latter category is generally restricted to those parties with most parliamentary seats. For example, in American studies on partisan media bias, the classic aim that news media should strictly reflect the outcome of social consensus can be found in the implicit or explicit definition of fair coverage as the equal treatment of Republicans and Democrats, which comes down to a 50/50 coverage** or a coverage that is in line with the number of seats each party possesses: Although no one expects there to be no biased statements in 100% of reports, a 50-50 breakdown of them would be indicative of a deliberate attempt to achieve balance, and thus deviations from the 50-50 pattern would arguably be an indication of bias of some kind. (Groeling, 2013: 143) **Clearly, the notion of partisan bias is rooted within a framework of objectivity and social consensus: pluralism is not interpreted as a matter of conflicting values, norms, and political preferences vis-a-vis a given social and political order, but about the disagreements which are allowed within that given social and political order**. Or, to put it simply, about those issues that Democrats and Republicans choose to disagree about. In other words, **since the analytical concept of partisan media bias excludes those matters where there is ideological convergence between both parties (say, global neoliberal capitalism and American imperialism), it only allows for evaluating pluralism ‘within the box’, that is, within the limits of existing social consensus**. In the end, such an approach to media pluralism does not appropriately take into account the democratic role of news media (definitely not in times of global economic and geopolitical crisis, like we are experiencing since the start of the financial–economic crisis in 2008**). It does not allow for a genuine democratic debate among citizens as ideological issues are monopolized by politics and political parties and framed within the status quo.** Therefore, it is imperative to evaluate the level of media debate using a conceptual framework that allows for pluralism ‘outside the box’. … to pluralism ‘outside the box’ **The objectivity benchmark should not only be challenged because of the ideological limits it sets, but foremost because of the fact that these limits are not perceived as such. Rules of objectivity reflect and shape an assumed social consensus about a hegemonic ideological project, while simultaneously disguising or camouflaging its ideological character**. This is most problematic since **ideology is at its strongest when it is no longer defined and perceived as such, when its assumptions and preferences appear evident and logical**, that is, hegemonic or depoliticized (Atton, 2002; Maeseele, 2013). Therefore, ‘no longer objectivity can be taken as the opposite of ideology in the media, if indeed the forms and **rhetoric of objectivity help to reproduce dominant political frameworks’** (Hackett, 1984: 253). In that sense, we are urgently in need of news analysis about and beyond the limits of objectivity and social consensus, that is, for pluralism ‘outside the box’. Clearly, such a shift in journalism studies requires breaking with traditional assumptions and approaches. As Downey et al. (2014) argue, ‘[…] if ideology critique is going to have any purchase, if it is to change hearts and minds in the field, then a more fully worked-out theoretical and methodological approach will be necessary’ (p. 6). Therefore, we choose to make this exercise both regarding specific assumptions about society (normative assumptions) and how these are operationalized toward journalism (analytical concepts). First, regarding normative assumptions, **we have shown that the notion of media objectivity is rooted within a belief in ideological harmony** – ‘the end of ideology’ – and the ideal of social consensus. **However, such an understanding of society does not recognize the irrefutable presence of the ideological limits to a consensus and, more specifically, the involved mechanisms of exclusion: ‘There is always an “outside” to discourse, a set of meanings, practices, identities and social relations, which is defined by exclusion and against which discursive boundaries are drawn’** (Dahlberg, 2007a: 835). **Obviously, the recognition of such an ‘outside’ is essential to arrive at and evaluate pluralism ‘outside the box’**. If we accept that society is inevitably marked by conflict and asymmetries of power and that every social order is the result of hegemonic practices, dominance, and exclusion, then **this implies that we need to start from a framework with ideological hegemony (instead of harmony) and contestation (instead of consensus) as basic concepts. Following such an interpretation, consensus is perceived as the temporary result of a provisional hegemony**, which, from a perspective of pluralist democratic politics, is – and must be – continuously questioned (Mouffe, 2005). Contestation,7 on the other hand, refers to how we can only speak of pluralism when there is a confrontation between clearly differentiated ideological positions. **Second, regarding analytical concepts, it is necessary to replace the widely adopted benchmark of objectivity with the identification of ideology in order to reflect on media pluralism** ‘outside the box’: ‘In any theory which seeks to explain both the monopoly of power and the diffusion of consent, the question of the place and role of ideology becomes absolutely pivotal’ (Hall, 1982: 86). **Journalism should not be evaluated on the extent it leaves out – thus, camouflages – ideological positions, but on the extent to which it makes these ideological positions explicit**: ‘It is important for audiences to be shown that there are different views; people should not be told “this is the correct interpretation”; there are always different interpretations’ (Mouffe in Carpentier and Cammaerts, 2006: 973). **Therefore, the notion of objectivity and its counterparts ‘balance’ and ‘impartiality’ should be reconsidered in favor of a terminology that benchmarks ideological contestation. Indeed, to change dominant modes of thinking, we are in need of an alternative analytical vocabulary: a new language outside the confines of the old paradigm is precisely the way to break boundaries and shape new understandings** (Jones, 2013).

#### Third, Advocacy journalism has a long history of strengthening movements for social justice. Frio 21:

Froio, Nicole. “How Journalists Are Challenging Ideas Of Objectivity While Empowering Their Communities.” Current. May 20, 2021. Web. February 12, 2022. <https://current.org/2021/05/how-journalists-are-challenging-ideas-of-objectivity- while-empowering-their-communities/>.

‘Neutrality is impossible for me’ The term “**movement journalism**” and the concept was formalized in a 2017 report by Project South, a Southern organization dedicated to cultivating strong social movements in the region. But Project South noted that **a tradition of alternative media in the U.S. that seek to advance social movements goes back to at least 1827, when free African Americans in New York founded the newspaper Freedom’s Journal**. Movement journalism also has **roots in Hispanic movements for emancipation** (the first Hispanic-owned newspaper in the U.S., El Mensagero Luisianés, was established in 1909), **Indigenous** **struggles** (The Cherokee Phoenix, the first Indigenous newspaper, debuted a year after Freedom’s Journal) **and labor movements** in the 1820s (labor journalism gave a platform to unions and people fighting for better working conditions). The work of investigative journalist and anti- lynching activist Ida B. Wells also foreshadowed the development of movement journalism. More recently, **proponents of movement journalism have identified noncommercial radio** **as a potential seedbed** for the practice. In its 2017 report, Project South pointed to low-power FM stations in the South as “a promising platform.” At the time, two Project South board members sat on the board of WRFG, a community radio station in Atlanta. The organization also had a relationship with WMXP, a low-power FM station in Greenville, N.C. Since 2016, Project South has planned a news outlet for social justice coverage that would syndicate programs to community radio. It has yet to launch that platform, but as a first step, Project South has started working with more than 50 Black-owned noncommercial radio stations in the South. The Black Radio Project gives the stations technical assistance, informational spots and public service announcements, according to Angela Oliver, Project South’s communications coordinator. PSAs have covered topics such as COVID prevention, voting rights and the need for civic engagement beyond elections. In addition, Project South is working on a database of experts to help producers in the network find diverse sources for stories. It is also organizing events to bring together DJs, artists and activists to strategize about movement building. “**The idea is to create a space for them to be able to strategize and help each other** — how can radio help get the message out?” Oliver said. “**How can activists provide content to the radio based on whatever work they’re doing at the time?” While public media may offer a forum for movement journalism to grow, Wallace risked his job in the system to highlight the shortcomings of traditional newsgathering.**

## Case

## Spark

#### No nuclear winter – conservative models prove rainout.

Reisner et al. 18 [Jon, Atmospheric researcher at LANL Climate and Atmospheric Sciences; Gennaro D'Angelo, UKAFF Fellow and member of the Astrophysics Group at the School of Physics of the University of Exeter, Research Scientist with the Carl Sagan Center at the SETI Institute, currently works for the Los Alamos National Laboratory Theoretical Division; Eunmo Koo, scientist in the Computational Earth Science Group at LANL, recipient of the NNSA Defense Program Stockpile Stewardship Program award of excellence; Wesley Even, R&D Scientist at CCS-2, LANL, specialist in computational physics and astrophysics; Matthew Hecht is a member of the Computational Physics and Methods Group in the Climate, Ocean and Sea Ice Modelling program (COSIM) at LANL, who works on modeling high-latitude atmospheric effects in climate models as part of the HiLAT project; Elizabeth Hunke, Lead developer for the Los Alamos Sea Ice Model, Deputy Group Leader of the T-3 Fluid Dynamics and Solid Mechanics Group at LANL; Darin Comeau, Scientist at the CCS-2 COSIM program, specializes in high dimensional data analysis, statistical and predictive modeling, and uncertainty quantification, with particular applications to climate science; Randall Bos is a research scientist at LANL specializing in urban EMP simulations; James Cooley is a Group Leader within CCS-2. 3/16/18 “Climate Impact of a Regional Nuclear Weapons Exchange: An Improved Assessment Based On Detailed Source Calculations.” Journal of Geophysical Research: Atmospheres, vol. 123, no. 5]

The no-rubble simulation produces a significantly more intense fire, with more fire spread, and consequently a significantly stronger plume with larger amounts of BC reaching into the upper atmosphere than the simulation with rubble, illustrated in Figure 5. While the no-rubble simulation **represents the worst-case scenario** involving vigorous fire activity, **only a relatively small amount of carbon makes its way into the stratosphere** during the course of the simulation. But while small compared to the surface BC mass, stratospheric BC amounts from the current simulations are significantly higher than what would be expected from burning vegetation such as trees (Heilman et al., 2014), e.g., the higher energy density of the building fuels and the initial fluence from the weapon produce an intense response within HIGRAD with initial updrafts of order 100 m/s in the lower troposphere. Or, in comparison to a mass fire, wildfires will burn only a small amount of fuel in the corresponding time period (roughly 10 minutes) that a nuclear weapon fluence can effectively ignite a large area of fuel producing an impressive atmospheric response. Figure 6 shows vertical profiles of BC multiplied by 100 (number of cities involved in the exchange) from the two simulations. The total amount of BC produced is in line with previous estimates (about 3.69 Tg from no-rubble simulation); however, the majority of BC resides **below the stratosphere** (3.46 Tg below 12 km) and can be **readily impacted by scavenging from precipitation** either via pyro-cumulonimbus produced by the fire itself (not modeled) or other synoptic weather systems. While the impact on climate of these more realistic profiles will be explored in the next section, it should be mentioned that **these estimates are** still **at the high end**, considering the inherent simplifications in the combustion model that lead to **overestimating BC production**. 3.3 Climate Results Long-term climatic effects critically depend on the initial injection height of the soot, with larger quantities reaching the upper troposphere/lower stratosphere inducing a greater cooling impact because of longer residence times (Robock et al., 2007a). Absorption of solar radiation by the BC aerosol and its subsequent radiative cooling tends to heat the surrounding air, driving an initial upward diffusion of the soot plumes, an effect that depends on the initial aerosol concentrations. **Mixing and sedimentation** tend to **reduce this process**, and low altitude emissions are also significantly impacted by precipitation if aging of the BC aerosol occurs on sufficiently rapid timescales. But once at stratospheric altitudes, aerosol dilution via coagulation is hindered by low particulate concentrations (e.g., Robock et al., 2007a) and lofting to much higher altitudes is inhibited by gravitational settling in the low-density air (Stenke et al., 2013), resulting in more stable BC concentrations over long times. Of the initial BC mass released in the atmosphere, most of which is emitted below 9 km, **70% rains out within the first month** and 78%, or about 2.9 Tg, is removed within the first two months (Figure 7, solid line), with the remainder (about 0.8 Tg, dashed line) being transported above about 12 km (200 hPa) within the first week. This outcome differs from the findings of, e.g., Stenke et al. (2013, their high BC-load cases) and Mills et al. (2014), who found that most of the BC mass (between 60 and 70%) is lifted in the stratosphere within the first couple of weeks. This can also be seen in Figure 8 (red lines) and in Figure 9, which include results from our calculation with the initial BC distribution from Mills et al. (2014). In that case, only 30% of the initial BC mass rains out in the troposphere during the first two weeks after the exchange, with the remainder rising to the stratosphere. In the study of Mills et al. (2008) this percentage is somewhat smaller, about 20%, and smaller still in the experiments of Robock et al. (2007a) in which the soot is initially emitted in the upper troposphere or higher. In Figure 7, the e-folding timescale for the removal of tropospheric soot, here interpreted as the time required for an initial drop of a factor e, is about one week. This result compares favorably with the “LT” experiment of Robock et al. (2007a), considering 5 Tg of BC released in the lower troposphere, in which 50% of the aerosols are removed within two weeks. By contrast, the initial e-folding timescale for the removal of stratospheric soot in Figure 8 is about 4.2 years (blue solid line), compared to about 8.4 years for the calculation using Mills et al. (2014) initial BC emission (red solid line). The removal timescale from our forced ensemble simulations is close to those obtained by Mills et al. (2008) in their 1 Tg experiment, by Robock et al. (2007a) in their experiment “UT 1 Tg”, and © 2018 American Geophysical Union. All rights reserved. by Stenke et al. (2013) in their experiment “Exp1”, in all of which 1 Tg of soot was emitted in the atmosphere in the aftermath of the exchange. Notably, the e-folding timescale for the decline of the BC mass in Figure 8 (blue solid line) is also close to the value of about 4 years quoted by Pausata et al. (2016) for their long-term “intermediate” scenario. In that scenario, which is also based on 5 Tg of soot initially distributed as in Mills et al. (2014), the factor-of2 shorter residence time of the aerosols is caused by particle growth via coagulation of BC with organic carbon. Figure 9 shows the BC mass-mixing ratio, horizontally averaged over the globe, as a function of atmospheric pressure (height) and time. The BC distributions used in our simulations imply that the upward transport of particles is substantially less efficient compared to the case in which 5 Tg of BC is directly injected into the upper troposphere. The semiannual cycle of lofting and sinking of the aerosols is associated with atmospheric heating and cooling during the solstice in each hemisphere (Robock et al., 2007a). During the first year, the oscillation amplitude in our forced ensemble simulations is particularly large during the summer solstice, compared to that during the winter solstice (see bottom panel of Figure 9), because of the higher soot concentrations in the Northern Hemisphere, as can be seen in Figure 11 (see also left panel of Figure 12). Comparing the top and bottom panels of Figure 9, the BC reaches the highest altitudes during the first year in both cases, but the concentrations at 0.1 hPa in the top panel can be 200 times as large. Qualitatively, the difference can be understood in terms of the air temperature increase caused by BC radiation emission, which is several tens of kelvin degrees in the simulations of Robock et al. (2007a, see their Figure 4), Mills et al. (2008, see their Figure 5), Stenke et al. (2013, see high-load cases in their Figure 4), Mills et al. (2014, see their Figure 7), and Pausata et al. (2016, see one-day emission cases in their Figure 1), due to high BC concentrations, but it amounts to only about 10 K in our forced ensemble simulations, as illustrated in Figure 10. Results similar to those presented in Figure 10 were obtained from the experiment “Exp1” performed by Stenke et al. (2013, see their Figure 4). **In that scenario as well, somewhat less than 1 Tg of BC remained in the atmosphere after the initial rainout**. As mentioned before, the BC aerosol that remains in the atmosphere, lifted to stratospheric heights by the rising soot plumes, undergoes sedimentation over a timescale of several years (Figures 8 and 9). This mass represents the effective amount of BC that can force climatic changes over multi-year timescales. In the forced ensemble simulations, it is about 0.8 Tg after the initial rainout, whereas it is about 3.4 Tg in the simulation with an initial soot distribution as in Mills et al. (2014). Our more realistic source simulation involves the worstcase assumption of no-rubble (along with other assumptions) and hence serves as an upper bound for the impact on climate. As mentioned above and further discussed below, our scenario induces perturbations on the climate system similar to those found in previous studies in which the climatic response was driven by roughly 1 Tg of soot rising to stratospheric heights following the exchange. Figure 11 illustrates the vertically integrated mass-mixing ratio of BC over the globe, at various times after the exchange for the simulation using the initial BC distribution of Mills et al. (2014, upper panels) and as an average from the forced ensemble members (lower panels). All simulations predict enhanced concentrations at high latitudes during the first year after the exchange. In the cases shown in the top panels, however, these high concentrations persist for several years (see also Figure 1 of Mills et al., 2014), whereas the forced ensemble simulations indicate that the BC concentration starts to decline after the first year. In fact, in the simulation represented in the top panels, mass-mixing ratios larger than about 1 kg of BC © 2018 American Geophysical Union. All rights reserved. per Tg of air persist for well over 10 years after the exchange, whereas they only last for 3 years in our forced simulations (compare top and middle panels of Figure 9). After the first year, values drop below 3 kg BC/Tg air, whereas it takes about 8 years to reach these values in the simulation in the top panels (see also Robock et al., 2007a). Over crop-producing, midlatitude regions in the Northern Hemisphere, the BC loading is reduced from more than 0.8 kg BC/Tg air in the simulation in the top panels to 0.2-0.4 kg BC/Tg air in our forced simulations (see middle and right panels). The more rapid clearing of the atmosphere in the forced ensemble is also signaled by the soot optical depth in the visible radiation spectrum, which drops below values of 0.03 toward the second half of the first year at mid latitudes in the Northern Hemisphere, and everywhere on the globe after about 2.5 years (without never attaining this value in the Southern Hemisphere). In contrast, the soot optical depth in the calculation shown in the top panels of Figure 11 becomes smaller than 0.03 everywhere only after about 10 years. The two cases show a similar tendency, in that the BC optical depth is typically lower between latitudes 30º S-30º N than it is at other latitudes. This behavior is associated to the persistence of stratospheric soot toward high-latitudes and the Arctic/Antarctic regions, as illustrated by the zonally-averaged, column-integrated mass-mixing ratio of the BC in Figure 12 for both the forced ensemble simulations (left panel) and the simulation with an initial 5 Tg BC emission in the upper troposphere (right panel). The spread in the globally averaged (near) surface temperature of the atmosphere, from the control (left panel) and forced (right panel) ensembles, is displayed in Figure 13. For each month, the plots show the largest variations (i.e., maximum and minimum values), within each ensemble of values obtained for that month, relative to the mean value of that month. The plot also shows yearly-averaged data (thinner lines). The spread is comparable in the control and forced ensembles, with average values calculated over the 33-years run length of 0.4-0.5 K. This spread is also similar to the internal variability of the globally averaged surface temperature quoted for the NCAR Large Ensemble Community Project (Kay et al., 2015). These results imply that surface air temperature differences, between forced and control simulations, which lie within the spread may not be distinguished from effects due to internal variability of the two simulation ensembles. Figure 14 shows the difference in the globally averaged surface temperature of the atmosphere (top panel), net solar radiation flux at surface (middle panel), and precipitation rate (bottom panel), computed as the (forced minus control) difference in ensemble mean values. The sum of standard deviations from each ensemble is shaded. Differences are qualitatively significant over the first few years, when the anomalies lie near or outside the total standard deviation. Inside the shaded region, differences may not be distinguished from those arising from the internal variability of one or both ensembles. The surface solar flux (middle panel) is the quantity that appears most affected by the BC emission, with qualitatively significant differences persisting for about 5 years. The precipitation rate (bottom panel) is instead affected only at the very beginning of the simulations. The red lines in all panels show the results from the simulation applying the initial BC distribution of Mills et al. (2014), where the period of significant impact is much longer owing to the higher altitude of the initial soot distribution that results in longer residence times of the BC aerosol in the atmosphere. When yearly averages of the same quantities are performed over the IndiaPakistan region, the differences in ensemble mean values lie within the total standard deviations of the two ensembles. The results in Figure 14 can also be compared to the outcomes of other previous studies. In their experiment “UT 1 Tg”, Robock et al. (2007a) found that, when only 1 Tg of soot © 2018 American Geophysical Union. All rights reserved. remains in the atmosphere after the initial rainout, temperature and precipitation anomalies are about 20% of those obtained from their standard 5 Tg BC emission case. Therefore, the largest differences they observed, during the first few years after the exchange, were about - 0.3 K and -0.06 mm/day, respectively, comparable to the anomalies in the top and bottom panels of Figure 14. Their standard 5 Tg emission case resulted in a solar radiation flux anomaly at surface of -12 W/m2 after the second year (see their Figure 3), between 5 and 6 time as large as the corresponding anomalies from our ensembles shown in the middle panel. In their experiment “Exp1”, Stenke et al. (2013) reported global mean surface temperature anomalies not exceeding about 0.3 K in magnitude and precipitation anomalies hovering around -0.07 mm/day during the first few years, again consistent with the results of Figure 14. In a recent study, Pausata et al. (2016) considered the effects of an admixture of BC and organic carbon aerosols, both of which would be emitted in the atmosphere in the aftermath of a nuclear exchange. In particular, they concentrated on the effects of coagulation of these aerosol species and examined their climatic impacts. The initial BC distribution was as in Mills et al. (2014), although the soot burden was released in the atmosphere over time periods of various lengths. Most relevant to our and other previous work are their one-day emission scenarios. They found that, during the first year, the largest values of the atmospheric surface temperature anomalies ranged between about -0.5 and -1.3 K, those of the sea surface temperature anomalies ranged between -0.2 and -0.55 K, and those of the precipitation anomalies varied between -0.15 and -0.2 mm/day. All these ranges are compatible with our results shown in Figure 14 as red lines and with those of Mills et al. (2014, see their Figures 3 and 6). As already mentioned in Section 2.3, the net solar flux anomalies at surface are also consistent. This overall agreement suggests that the **inclusion of organic carbon aerosols, and** ensuing **coagulation** with BC, **should not dramatically alter the climatic effects** resulting from our forced ensemble simulations. Moreover, aerosol growth would likely **shorten the residence time of the BC particulate in the atmosphere** (Pausata et al., 2016), possibly **reducing the duration of these effects.**

#### Can’t rebuild industrial civilization.

John Jacobi 17. [Leads an environmentalist research institute and collective, citing Fred Hoyle, British astronomer, formulated the theory of stellar nucleosynthesis, coined the term “big bang,” recipient of the Gold Medal of the Royal Astronomical Society, professor at the Institute of Astronomy, Cambridge University. 05-27-17. “Industrial Civilization Could Not Be Rebuilt.” The Wild Will Project. <https://www.wildwill.net/blog/2017/05/27/industrial-civilization-not-rebuilt/>]

A suggestion, for the sake of thought: If industrial civilization collapsed, it probably could not be rebuilt. Civilization would exist again, of course, but industry appears to be a one-time experiment. The astronomist Fred Hoyle, exaggerating slightly, writes: It has often been said that, if the human species fails to make a go of it here on Earth, some other species will take over the running. In the sense of developing high intelligence this is not correct. We have, or soon will have, exhausted the necessary physical prerequisites so far as this planet is concerned. With coal gone, oil gone, high-grade metallic ores gone, no species however competent can make the long climb from primitive conditions to high-level technology. This is a one-shot affair. If we fail, this planetary system fails so far as intelligence is concerned. The same will be true of other planetary systems. On each of them there will be one chance, and one chance only. Hoyle overstates all the limits we actually have to worry about, but there are enough to affirm his belief that industry is a “one-shot affair.” In other words, if industry collapsed then no matter how quickly scientific knowledge allows societies to progress, technical development will hit a wall because the builders will not have the needed materials. For example, much of the world’s land is not arable, and some of the land in use today is only productive because of industrial technics developed during the agricultural revolution in the 60s, technics heavily dependent on oil. Without the systems that sustain industrial agriculture much current farm land could not be farmed; agricultural civilizations cannot exist there, at least until the soil replenishes, if it replenishes. And some resources required for industrial progress, like coal, simply are not feasibly accessible anymore. Tainter writes: . . . major jumps in population, at around A.D. 1300, 1600, and in the late eighteenth century, each led to intensification in agriculture and industry. As the land in the late Middle Ages was increasingly deforested to provide fuel and agricultural space for a growing population, basic heating, cooking, and manufacturing needs could no longer be met by burning wood. A shift to reliance on coal began, gradually and with apparent reluctance. Coal was definitely a fuel source of secondary desirability, being more costly to obtain and distribute than wood, as well as being dirty and polluting. Coal was more restricted in its spatial distribution than wood, so that a whole new, costly distribution system had to be developed. Mining of coal from the ground was more costly than obtaining a quantity of wood equivalent in heating value, and became even more costly as the 54 most accessible reserves of this fuel were depleted. Mines had to be sunk ever deeper, until groundwater flooding became a serious problem. Today, most easily accessible natural coal reserves are completely depleted. Thus, societies in the wake of our imagined collapse would not be able to develop fast enough to reach the underground coal. As a result of these limits, rebuilding industry would take at least thousands of years — it took 10,000 years the first time around. By the time a civilization reached the point where it could do something about industrial scientific knowledge it probably would not have the knowledge anymore. It would have to develop its sciences and technologies on its own, resulting in patterns of development that would probably look similar to historical patterns. Technology today depends on levels of complexity that must proceed in chronological stages. Solar panels, for example, rely on transportation infrastructure, mining, and a regulated division of labor. And historically the process of developing into a global civilization includes numerous instances of technical regression. The natives of Tasmania, for example, went from a maritime society to one that didn’t fish, build boats, or make bows and arrows. Rebuilding civilization would also be a bad idea. Most, who are exploited by rather than benefit from industry, would probably not view a rebuilding project as desirable. Even today, though citizens of first-world nations live physically comfortable lives, their lives are sustained by the worse off lives of the rest of the world. “Civilization . . . has operated two ways,” Paine writes, “to make one part of society more affluent, and the other more wretched, than would have been the lot of either in a natural state.” Consider the case of two societies in New Zealand, the Maori and the Moriori. Both are now believed to have originated out of the same mainland society. Most stayed and became the Maori we know, and some who became the Moriori people settled on the Chatham Islands in the 16th century. Largely due to a chief named Nunuku-whenua, the Moriori had a strict tradition of solving inter-tribal conflict peacefully and advocating a variant of passive resistance; war, cannibalism, and killing were completely outlawed. They also renounced their parent society’s agricultural mode of subsistence, relying heavily on hunting and gathering, and they controlled their population growth by castrating some male infants, so their impact on the non-human environment around them was minimal. In the meantime, the Maori continued to live agriculturally and developed into a populated, complex, hierarchical, and violent society. Eventually an Australian seal-hunting ship informed the Maori of the Moriori’s existence, and the Maori sailed to the Chathams to explore: . . . over the course of the next few days, they killed hundreds of Moriori, cooked and ate many of the bodies, and enslaved all the others, killing most of them too over the next few years as it suited their whim. A Moriori survivor recalled, “[The Maori] commenced to kill us like sheep . . . [We] were terrified, fled to the bush, concealed ourselves in holes underground, and in any place to escape our enemies. It was of no avail; we were discovered and eaten – men, women, and children indiscriminately.” A Maori conqueror explains, “We took possession . . . in accordance with our customs and we caught all the people. Not one escaped. Some ran away from us, these we killed, and others we killed – but what of that? It was in accordance with our custom.” Furthermore, we can deduce from the ubiquitous slavery in all the so-called “great civilizations” like Rome or Egypt that any attempt to rebuild a similar civilization will involve slavery. And to rebuild industry, something similar to colonization and the Trans-Atlantic Slave Trade would probably have to occur once again. After all, global chattel slavery enabled the industrial revolution by financing it, extracting resources to be accumulated at sites of production, and exporting products through infrastructure that slavery helped sustain. So, if industrial society collapsed, who would be doing the rebuilding? Not anyone most people like. It is hard to get a man to willingly change his traditional way of life; even harder when his new life is going into mines. And though history demonstrates that acts like those of the Maori or slave traders are not beyond man’s will or ability, certainly most in industrial society today would not advocate going through the phases required to reach the industrial stage of development.

#### Err negative on impact weighing – their evidence is unwarranted pessimism – updated models.

Rodriguez 20 [Luisa Rodriguez is research fellow at the Forethought Foundation for Global Priorities Research. Previously, she researched nuclear war at Rethink Priorities and as a visiting researcher at the Future of Humanity Institute, "What is the likelihood that civilizational collapse would directly lead to human extinction (within decades)? - EA Forum", 24th Dec 2020, https://forum.effectivealtruism.org/posts/GsjmufaebreiaivF7/what-is-the-likelihood-that-civilizational-collapse-would#Concrete\_example\_\_A\_large\_nuclear\_war\_that\_causes\_a\_nuclear\_winter]

Case 2: 90% population loss, infrastructure damage, and extreme climate change (e.g. nuclear war that caused nuclear winter) In a scenario in which a catastrophe causes the deaths of 90% of the population (800 million survivors), major infrastructure damage, and climate change — for example, a severe, global nuclear war that caused a nuclear winter — I believe the question of whether humans would be able to meet their basic needs becomes more difficult.[14] The questions I consider for this scenario are: What is the likelihood that survivors are able to continue to survive using traditional forms of agriculture, given a catastrophe that causes severe infrastructure damage and climate change? What is the likelihood that radiation causes extinction? What is the likelihood that humanity would survive in the event of conflict immediately following the catastrophe? What is the likelihood that survivors are able to continue to survive using traditional forms of agriculture? Time spent on this section: 2–3 hours Types of sources: Academic literature, non-academic reports, and expert interviews Expert judgment: Several experts, including ALLFED director David Denkenberger, have affirmed this conclusion — they do not expect humanity to dip below the minimum viable population even in relatively extreme sun-blocking scenarios. Literature review: The nature of all of the catastrophes we know of that would cause extreme global cooling (e.g. nuclear winter, asteroid impacts) **would have unevenly distributed impacts** — causing extreme global cooling in some parts of the world, but more moderate cooling in others. For example, in the case of a nuclear war between the US and Russia, nuclear winter models suggest that the most **severe climate effects would be limited** to the Northern Hemisphere, where temperatures would fall by 10–30 degrees C. But in the Southern Hemisphere, and especially at the equator, those effects would be much less severe: between 5–10 degrees Celsius. With heterogeneous impacts like this, it’s likely that agriculture would still be possible in some regions — especially in New Zealand and Australia, and possibly in South America and Central Africa.[15] To be clear, I’m describing a very grim scenario, in which basically everyone in the Northern Hemisphere — and in many parts of the Southern Hemisphere — would be unable to grow food using standard agricultural techniques. Given this, I expect there would be mass starvation and violent competition and conflict until a new equilibrium was reached, one where the remaining survivors didn’t exceed the Earth’s carrying capacity. While I expect this would be a truly terrible period of widespread suffering, I believe this equilibrium would be reached long before the population got anywhere near the minimum viable population. My best guess is the population would fall to hundreds of thousands to tens of millions, but not much lower. While I haven’t looked into this much, I feel fairly convinced that hundreds of thousands or **millions** of people **could survive** using traditional approaches to agriculture in parts of the world with more moderate climate effects (and basic mitigation strategies, like switching to crop types that are more resilient to temperature and precipitation fluctuations). And as with Case 1, at least some of the survivors in a Case 2 scenario would probably be able to survive the immediate aftermath of a catastrophe that caused civilizational collapse by exploiting food and other supplies in stores and larger stockpiles. This would give survivors some buffer time to learn additional skills required to survive once those supplies run out (e.g. fishing) or develop the techniques necessary to produce food using methods that don’t rely on climate factors like warm temperatures and regular precipitation. BOTEC: The longer the buffer time, the more likely humanity would be to subsequently survive. But there are a number of different considerations (relative to Case 1) that affect the calculus of just how long such a grace period would be in the context of a catastrophic event like a nuclear war that killed 90% of people and caused a nuclear winter. So I’ve done a similar exercise to the one above where I try to account for some of those differences. Note: As above, the following BOTEC relies on particularly poor sources, makes a bunch of dubious assumptions (discussed more below), and I’m not confident I’ve thought of all of the most important supplies. It should be considered very rough. TABLE5 See table note here.[16] Bottom line: I think it’s extremely likely that these supplies would last somewhere between around a year and a decade or more. I expect it would be closer to the lower end, given that competition and violence could lead to the depletion of supplies more quickly than if the population were reduced to a smaller number by the catastrophe directly. All this in mind, I think it is very likely that the survivors would be able to learn enough during the grace period to be able to feed and shelter themselves ~indefinitely. What is the likelihood that radiation causes extinction? Time spent on this section: 2–3 hours Types of sources: Academic papers, Wikipedia, and interviews with experts Literature review: In the aftermath of a nuclear war, radioactive fallout from the nuclear detonations would have long-lasting health impacts. In **the most extreme** nuclear war **scenario**s considered by academics (a nuclear war between the US and Russia and their allies, using 10,000 megatons (MT) of nuclear bombs), approximately 30% of the geographic area in the Northern Hemisphere would have enough fallout to be lethal to any adult in the area (Ehrlich et al., 1983). The current US and Russian nuclear arsenals don’t currently have that kind of megatonnage (they currently have closer to 2,500 MT). If we naively assume that radiation scales linearly, we might expect a modern day US-Russia nuclear war to contaminate up to 7.5% of the land area of the Northern Hemisphere. This may not sound like much, but consider that 95% of the world’s population lives on just 10% of its land area — meaning that 7.5% of land area could be home to millions or even billions of people. What’s more, tens to hundreds of millions more might be exposed to enough radiation to be more susceptible to cancer for the rest of their lives. On top of this, there are currently around 440 civilian nuclear power reactors scattered around the world, and likely tens or hundreds more military reactors. These have fail-safes and automatic shut down measures that are designed to ensure that all of the nuclear material in these reactors would be safely contained in the event of a global catastrophe that meant people stopped attending to them. Concretely, these fail safes make sure that water continues to be circulated around the nuclear fuel to ensure it doesn’t get so hot it causes a meltdown — i.e., an event where the nuclear core partially or completely melts, which might allow the nuclear fuel to breach its multiple layers of containment and leak out into the environment. If fuel did reach the environment, the radioactive fallout could spread across continents, creating exposure levels ranging from immediately fatal (in areas ranging from tens to thousands of square kilometers) to non-lethal but causing potential higher rates of cancer and infertility. But some of these fail-safes could plausibly fail during a catastrophe that caused infrastructure damage (or afterward, if any components of the fail system degraded). For example, some nuclear reactors rely on backup generators to power the pumps that keep water circulating in the core of the reactor. If those backup generators eventually all broke down, the reactor might melt down. I currently don’t have a good sense of how likely these failures would be. Newer nuclear reactors rely on more robust safety systems, with parts that wouldn’t break down as easily. And all nuclear reactor safety systems are designed to account for infrastructure damage caused by earthquakes and other physical shocks. But in a large-scale nuclear war, it seems very plausible that at least some nuclear reactors would melt down. My best guess is that this wouldn’t happen at a large scale, but even if it did, some areas would likely be far enough away from reactors to be spared the radioactive contamination. For example, Australia has just one nuclear reactor. Even if that reactor were to melt down, much of Australia would likely remain uncontaminated (Australia is just under 3 million square miles, and the Chernobyl meltdown is estimated to have contaminated under 60,000 square miles; and only a much smaller fraction of that area was sufficiently contaminated as to be lethal to humans). Bottom line: While radioactive fallout from nuclear detonations and power plant meltdowns would increase the death toll in the years following the collapse, I expect it **wouldn’t be** widespread enough to be immediately **fatal to everyone**, nor would it cause fertility rates or life expectancy to decrease enough to threaten extinction. And at the very least, **some** areas **are sufficiently far away as to be** relatively **safe** from radioactive fallout. What is the likelihood that humanity would survive in the event of conflict immediately following the catastrophe? Time spent on this section: 1–2 hours Types of sources: Academic literature, expert interviews, and speculation Historical base rate: In Case 2, it seems slightly more plausible to me that violence would lead to human extinction than in Case 1, but still fairly unlikely. I don’t think human extinction could be caused by a conflict fought with conventional weapons; **there would** just **be** **too many survivors (~800 million)** to be killed in conventional warfare (compare this to WWI and WWII, during which ~20 million and ~75 million people were killed, respectively). Weapons of mass destruction: My best guess is that the only way violence in the wake of a Case 2 civilizational collapse could directly lead to human extinction is if one group of **survivors** had access to and deployed weapons of mass destruction. This seems unlikely to me, first because it seems hard to imagine a group of survivors incapable of recovering critical infrastructure — and barely capable of meeting even their basic needs — would be able to successfully deploy weapons of mass destruction (though I’m not very confident about this). Second, it’s hard to imagine a scenario where the use of weapons of mass destruction kills millions of survivors, spread all over the world, without modern technologies like transportation. For example, with potentially many survivor groups, it seems hard to imagine how nuclear detonations would kill ~everyone despite the fact that the groups would likely be spread out all over the world, potentially in small bands that can’t each be individually targeted. Similarly, it’s hard to imagine how a pathogen could spread ~everywhere when survivors would likely have greatly reduced mobility (the latter isn’t obviously impossible, but it at least seems exceedingly difficult to me). There’s one counterargument I find somewhat persuasive, which is that it seems possible that all of the survivors might be confined to a relatively small area (for example, if only a small fraction of the Earth’s land area is habitable), making them more vulnerable to a single, large attack. If this were the case, it’s easier for me to imagine that the use of weapons of mass destruction could kill all of the remaining survivors. This would presumably mean the aggressors would be killing themselves, which makes it seem even less likely to me. But we’ve seen humans come dangerously close to threatening their own survival before, often because human aggressors aren’t always good at predicting how cascading effects could threaten their survival as well. A random example to make this concrete: If all of the survivors of a nuclear war were confined to Australia, which might be less impacted by a nuclear winter, one group might choose to use nuclear weapons against another group, not realizing that the radioactive fallout or further climate change could make Australia uninhabitable, even for them. Bottom line: I expect the survivors in Case 2 would not deploy weapons of mass destruction against their competitors, as it would likely pose a pretty big risk to the aggressor as well as the target. But I’m uncertain about this — humans have come close to making similarly self-destructive choices before. Thankfully, even if one group did use weapons of mass destruction against their competitors, I still think it’s very unlikely that their use would cause human extinction. This is because except in a few very specific and very strange scenarios, I expect the survivors would be too geographically distributed and disconnected to be wiped out by a single act of aggression. I therefore expect the result would be a much higher death toll, but not extinction. Concrete example: A large nuclear war that causes a nuclear winter So what, concretely, do I think would happen in the event of a catastrophe like a nuclear war that led to the death of 90% of the population, and caused severe infrastructure damage and significant global cooling? I expect that, in addition to the billions of people killed in the initial catastrophe, hundreds of millions or more would likely die in the famines and violent competition that followed. But my best guess is that hundreds of thousands to hundreds of millions of the survivors of the initial catastrophe would survive this violent period. I think it’s extremely likely these survivors would be able to support themselves using leftover food stocks and supplies, before eventually working out how to feed themselves through traditional agriculture and fishing and/or modified agriculture (using methods that don’t rely on climate factors like warm temperatures and regular precipitation). **All of the catastrophes** we know of **that would lead to extreme cooling** would only do so **for** 1–**10 years, and agriculture would become possible again once the climate began to return to normal**. At that point, it seems even more likely that the surviving humans would be able to meet their own basic needs by returning to traditional forms of agriculture. My key uncertainties are around whether I’m putting too much weight on the idea that humans would figure out how to subsist without traditional agriculture just because it’s technically possible, and whether conflict could lead to extinction through channels I haven’t foreseen. Another toy calculation suggests that these **uncertainties** probably **aren’t troubling enough to change my bottom line**. Note: I again assume each group’s fate is independent of the fates of other groups. I actually think this is a pretty reasonable assumption in this case. I expect that the **survivors** of a catastrophe like a severe nuclear war **would end up somewhat spread out** (at least across the Southern Hemisphere), as doing so would create less competition for resources within a smaller area (I discuss this more later). The farther apart the surviving groups are, the less likely they are to be affected by the same shocks (natural disasters, disease outbreaks, conflict). Additionally, in the event of a catastrophe like a nuclear war, transportation, communication, and other technologies that facilitate contact between geographically distributed groups would be enormously limited. This would further limit the extent to which each group’s fate ended up relating to another’s. There would be other sources of variation between groups that made their fates less correlated: Some groups might be made up mostly of farmers, while others will be made up of lawyers, some groups will tend toward cooperation, while others toward conflict, plus pure randomness (e.g. some groups might have a high proportion of survivors with genetic immunity to a particular disease). But there are also factors that point in the other direction — factors that suggest the surviving groups would be at least somewhat correlated. For example, nuclear winter climate conditions, while nonuniform, would nonetheless impact all surviving groups. Similarly, more severe natural disasters might affect large regions, meaning that at least all of the survivor groups at the regional level might end up experiencing very similar challenges to survival simultaneously. Likewise, there might be things about "human nature" that would be shared amongst all survivors. For example, it’s possible that all of the survivors, having witnessed the initial catastrophe, would have similar psychological experiences — like shock, stress, and social distrust, among others — that would make it more difficult to survive and cooperate. As above, the higher the true correlation between survivor groups, the more my toy calculations will cause me to underestimate the probability that all of the survivor groups would be wiped out. TABLE6 With 800 million survivors, the degree of pessimism you have to have about their ability to survive to end up believing that no groups would survive indefinitely is actually kind of extreme. The exact beliefs you’d have to have would depend on whether survivors were concentrated into a few big groups, or distributed in many smaller ones. Specifically: Even if you thought any given group of 100, 1,000, or 10,000 survivors had a 99% chance of being wiped out, it would still be virtually guaranteed that at least one group would survive. If you thought there was a 99% chance that any one of 800 groups of 100,000 people would be wiped out, there would still only be a 1 in 3,000 chance of extinction. The probability of extinction is higher (45%) if you believe that larger groups of 10 million would also have a 99% chance of being wiped out. But, again, to hold that view, you’d have to think that out of a group of 10 million people (again, bigger than the largest US city), not even a few hundred of those people would overcome the obstacles of the post-collapse environment (how to fish, how to farm despite global cooling, avoiding being killed by a hurricane or drought). I do not find this view very plausible. Similarly, the probability of extinction is very high indeed if you think that any given group of 100 million survivors has a 99% chance of being wiped out. Again, to believe extinction risk was that high, you’d have to think that there would be a 99% chance that none of the 100 million people would work out how to survive (for reference, only 14 countries have a population of 100 million or higher). Given all of this, my subjective judgment is that **it’s very unlikely that this scenario would more or less directly lead to human extinction.**

#### Quantum vacuum mining destroys the universe- it’s feasible and inevitable

**Folger 8 –** Tim Folger, Contributing Editor at Discover Magazine, Writer for National Geographic, MA in Journalism from New York University, BA in Physics from UC Santa Cruz, “Nothingness of Space Could Illuminate the Theory of Everything”, Discover Magazine, 7-18, http://discovermagazine.com/2008/aug/18-nothingness-of-space-theory-of-everything

When the **next revolution** rocks physics, **chances are** it will be about nothing—the **vacuum**, that endless infinite void. In a discipline where the stretching of time and the warping of space are routine working assumptions, the vacuum remains a sort of cosmic koan. And as in the rest of physics, its nature has turned out to be mind-bendingly weird: Empty space is not really empty because nothing contains something, seething with energy and particles that flit into and out of existence. Physicists have known that much for decades, ever since the birth of quantum mechanics. But **only in the last 10 years** has the vacuum taken **center stage** as a font of confounding mysteries like the nature of dark energy and matter; only recently has the void turned into a tantalizing beacon for cranks. As one blond celebrity heiress and embodiment of emptiness might say, nothing is hot.

To investigate the mysteries of the void, some physicists are using the biggest scientific instrument ever built—the just-completed Large Hadron Collider, a huge particle accelerator straddling the French-Swiss border. Others are designing tabletop experiments to see if they can plumb the vacuum for ways to power strange new nanotech devices. “The vacuum is one of the places where our knowledge fizzles out and we’re left with all sorts of crazy-sounding ideas,” says John Baez, a mathematical physicist at the University of California at Riverside. Whether in the visionary search for the engine of cosmic expansion or the near-fruitless quest for perpetual free energy, the vacuum is where it’s happening. By mining the vacuum’s riches, a true theory of everything may yet emerge.

Empty space wasn’t always so mystifying. Until the 1920s physicists viewed the vacuum much as the rest of us still do: as a featureless nothingness, a true void. That all changed with the birth of quantum mechanics. According to that theory, the space around a particle is filled with countless “virtual” particles rapidly bursting into and out of existence like an invisible fireworks display.

Those virtual quantum particles are more than a theoretical abstraction. Sixty years ago a Dutch physicist named Hendrik Casimir suggested a simple experiment to show that virtual particles can move objects in the real world. What would happen, he asked, to two metal plates placed very close together in a complete vacuum? In the days before quantum mechanics, physicists would have said that the plates would just sit there. But Casimir realized that the net pressure of all the virtual particles—the stuff of empty space—outside the plates should exert a minuscule force, a nudge from nothing that would push the plates together.

Physicists tried for decades to measure the Casimir force with great precision, but it wasn’t until 1997 that technology caught up with theory. In that year, physicist Steve Lamoreaux, now at Yale, managed to detect the feeble Casimir force on two small surfaces separated by a few thousandths of a millimeter. Its strength was about equal to the force that would be exerted against the palm of one’s hand by the weight of a single red blood cell.

At first most physicists regarded the Casimir force as a quantum oddity, something of no practical value. Now that has changed: Forward thinkers see it as an **important energizer** for the tiniest of machines, devices on the nano scale, and a few labs are working on ways to use the force to defy the conventional limitations of mechanical design. Federico Capasso, a physicist at Harvard, leads a small team that is trying to create a repulsive Casimir force by tinkering with the shapes of plates or with the coatings used to cover them. His entire set of experiments fits on a desktop, and the objects he works with are so small that most of them cannot be seen without a microscope.

“Once you have a repulsive force between two plates, you should be able to eliminate static friction,” Capasso says. That could lead to a host of useful applications, including tiny frictionless bearings or nanogears that spin without touching. “But the experiments are enormously difficult, so I cannot tell you when and how.”

For all its strangeness, the Casimir force may be the one property of empty space that does not baffle today’s physicists. It is garden-variety quantum mechanics, weird but not unexpected. The same can’t be said about dark energy, a truly astonishing discovery made by astronomers a decade ago while observing distant exploding stars. The explosions revealed a universe expanding at an ever-faster rate, a finding at odds with previous expectations that the expansion of the cosmos should be slowing down, braked by the collective gravitational pull of all the matter out there. Some unknown form of energy—physicists call it dark energy simply for lack of a more descriptive term—appears to be built into the very fabric of space, countering the gravitational pull of matter and pushing everything in the universe apart. Some theorists speculate that dark energy might cause a runaway expansion of the universe, resulting in a so-called Big Rip some 50 billion years from now that would tear the cosmos to pieces, shredding even atoms.

The observations have allowed physicists to estimate the quantity of dark energy by deducing the force needed to produce the accelerating effect. The result is a minuscule amount of energy for every cubic meter of vacuum. Since most of the cosmos consists of empty space, though, that little bit adds up, and the total amount of dark energy completely dominates the dynamics of the universe.

With the discovery of dark energy came difficult questions: What is this energy, and where does it come from? Physicists simply do not know. According to quantum mechanics, the energy of empty space comes from the virtual particles that dwell there. But when physicists use the equations of quantum theory to calculate the amount of that virtual energy, they get a ridiculously huge number—about 120 orders of magnitude too large. That much energy would literally blow the universe apart: Objects a few inches from us would be carried away to astronomical distances; the universe would literally double in size every 10-43 second, and it would keep doubling at that rate until all the vacuum energy was gone. This may be the most colossal gap between observation and theory in the history of science. And it means that physicists are missing something fundamental about the way the universe works.

“We’ve made a prediction on the basis of our best theories, and it is wrong, wildly wrong,” says Sean Carroll, a theoretical physicist at the California Institute of Technology. “That means we don’t just tweak a parameter here and there; we really have to think deeply about what our theories are.”

Even if no one knows where the energy of empty space comes from or why it has the value it does, there is **now no doubt** that it **exists**. And if there is energy to be had, there is **inevitably** somebody out there thinking of how to exploit it. The notion of limitless energy from empty space has inspired **legions** of wannabe physicists who dream of developing the ultimate perpetual-motion device, a machine that would solve the world’s energy problems forever. A quick Internet search for the words free energy and vacuum turns up pages and pages of schemes for tapping the vacuum’s energy. I ask John Baez if such efforts are as hopeless as previous perpetual-motion machines. Are they equally crazy and doomed to failure?

“Perhaps not as doomed as trying to prove the world is flat,” Baez says. “One thing I can say is that I sure hope it doesn’t work, because if you could extract energy from the vacuum, it would **mean that the vacuum is not stable**. For normal physicists,” he adds with a laugh, “the definition of the vacuum is that it’s the lowest-energy situation possible—it has less energy than anything else.” In short, Baez says, while we may be able to get energy from the vacuum, success “would mean the universe is far more unstable than we ever dreamed.”

The reasoning goes like this: If the vacuum is not at the lowest energy state possible, then at some point in the future, the vacuum could fall to a lower state, pulsing out energy that would **threaten the very structure of the cosmos**. If some clever engineer were ever to extract energy from the vacuum, it could **set off a chain reaction** that would **spread at the speed of light and destroy the universe**. Free energy, yes, but not what the inventors had in mind.

#### Multiple countries are investing billions and they’re ripe for theft

Jeff **Daniels**, 3-17-20**17**, “Mini-nukes and mosquito-like robot weapons being primed for future warfare,” CNBC, <https://www.cnbc.com/2017/03/17/mini-nukes-and-inspect-bot-weapons-being-primed-for-future-warfare.html>

Several countries are developing nanoweapons that could unleash attacks using mini-nuclear bombs and insect-like lethal robots.  While it may be the stuff of science fiction today**, the advancement of nanotechnology in the coming years will make it a bigger threat to humanity than conventional nuclear weapons**, according to an expert. The U.S., Russia and China are believed to be investing billions on nanoweapons research.  “Nanobots are the real concern about wiping out humanity because they can be weapons of mass destruction,” said Louis Del Monte, a Minnesota-based physicist and futurist. He’s the author of a just released book entitled “Nanoweapons: A Growing Threat To Humanity.”  One unsettling prediction Del Monte’s made is that terrorists could get their hands on nanoweapons as early as the late 2020s through black market sources.

## Climate

#### Best science proves no warming impact.

**Idso et al 18** (Craig, Geography@ArizonaState, David Legates, Climatology@ Delaware, ProfClimatology@ Deleware, Fred Singer, Physics@ Princeton, ProfEnviroScience@ Virginia, Climate Change Reconsidered II: Fossil Fuels, NIPCC, Ch.2, p. 108-109, http://climatechangereconsidered.org/climate-change-reconsidered-ii-fossil-fuels/)

Methodology The Scientific Method is a series of requirements imposed on scientists to ensure the integrity of their work. **The IPCC has not followed established rules** that guide scientific research. Appealing to consensus may have a place in science, but not as a means of shutting down debate. Uncertainty in science is unavoidable but must be acknowledged. Many declaratory and predictive statements about the global climate are **not warranted by science**. Observations Surface air temperature is governed by energy flow from the Sun to Earth and from Earth back into space. Whatever diminishes or intensifies this energy flow can change air temperature. Levels of carbon dioxide and methane in the atmosphere are governed by processes of the carbon cycle. Exchange rates and other climatological processes are poorly understood. The geological record shows temperatures and CO2 levels in the atmosphere **have not been stable**, making untenable the IPCC’s assumption that they would be stable in the future in the absence of human emissions. Water vapor is the dominant greenhouse gas owing to its abundance in the atmosphere and the wide range of spectra in which it absorbs radiation. Carbon dioxide (CO2) absorbs energy only in a very narrow range of the longwave infrared spectrum. Controversies Reconstructions of average global surface temperature differ depending on the methodology used. The warming of the twentieth and early twenty-first centuries has **not been shown to be beyond the bounds of natural variability.** General circulation models (GCMs) are unable to accurately depict complex climate processes. They do not accurately hindcast or forecast the climate effects of human-related greenhouse gas emissions. Estimates of equilibrium climate sensitivity (the amount of warming that would occur following a doubling of atmospheric CO2 level) range widely. The IPCC’s estimate is higher than many recent estimates. **Solar irradiance, magnetic fields, UV fluxes, and cosmic rays** are poorly understood and may have greater influence on climate than general circulation models currently assume. Climate Impacts There is **little evidence** that the warming of the twentieth and early twenty-first centuries has caused a general increase in severe weather events. Meteorological science suggests a warmer world will see **milder weather patterns**. Arctic ice is losing mass, but melting commenced before there was a human impact on climate and is not unprecedented. Antarctica is either gaining ice mass or is unchanged. Best available data show **sea-level rise is not accelerating**. Local and regional sea levels continue to exhibit typical natural variability. The link between warming and drought is weak, and by some measures drought decreased over the twentieth century. Changes in the hydrosphere of this type are regionally highly variable and show a closer correlation with multidecadal climate rhythmicity than they do with global temperature. Plants have responded positively to rising temperatures and carbon dioxide levels in the atmosphere, a trend that is likely to continue beyond the twenty-first century. Why Scientists Disagree Climate is an interdisciplinary subject requiring insights from many fields of study. Very few scholars have mastery of more than one or two of these disciplines. Fundamental uncertainties arise from insufficient observational evidence and disagreements over how to interpret data and how to set the parameters of models. Many scientists trust the Intergovernmental Panel on Climate Change (IPCC) to objectively report the latest scientific findings on climate change, but it has failed to produce balanced reports and has allowed its findings to be misrepresented to the public. Climate scientists, like all humans, can have tunnel vision. Bias, even or especially if unconscious, can be especially pernicious when data are equivocal and allow multiple interpretations, as in climatology. Appeals to Consensus Surveys and abstract-counting exercises that are said to show a “scientific consensus” on the causes and consequences of climate change **invariably ask the wrong questions or the wrong people**. No survey data exist that support claims of consensus on important scientific questions. Some survey data, petitions, and peer-reviewed research show deep disagreement among scientists on issues that must be resolved before the man-made global warming hypothesis can be accepted. Some **31,000 scientists** have signed a petition saying “there is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth’s atmosphere and disruption of the Earth’s climate.” Prominent climate scientists have said repeatedly that there is no consensus on the most important issues in climate science.

#### Warming fuels Jellyfish prolif

**Woodward 19** [Aylin Woodward, 10-30-2019, "Thousands of animals around the world are at risk of extinction. But not jellyfish — they're thriving in warm, polluted water.," Business Insider, https://www.businessinsider.com/jellyfish-thriving-climate-change-warm-oceans-2019-10#they-move-by-rapidly-contracting-their-mushroom-shaped-bell-to-expel-water-which-propels-them-forward-2, accessed 10-31-2020]LHSBC

[Recent research](http://www.everythingconnects.org/uploads/7/0/3/5/7035190/art3a10.10072fs10750-012-1039-71.pdf) has revealed that the increases in jellyfish populations can be linked to human activity, too. As **greenhouse gases trap heat on the planet, oceans are heating up** — they **absorb 93% of that excess heat**. Unlike many marine species, **jellies can thrive in warmer water with less oxygen.** What's more, their natural predators, like turtles and sharks, are being overfished by humans.∂ Here's what to know about why jellyfish are thriving — and why their population explosion could be dangerous. ∂ Jellies are 95% water. The creatures don't have brains, stomachs, intestines, or lungs.∂ Instead, nutrients and oxygen slip through [their gelatinous layers of see-through skin](https://www.businessinsider.com/human-sized-jellyfish-photo-uk-2019-7).∂ They move by rapidly contracting their mushroom-shaped bell to expel water, which propels them forward.∂ Trailing tentacles then brush against prey, immobilizing the jelly's next meal with tiny venom-filled stingers. The tentacles move that prey up into the creature's body cavity, [where it gets digested](https://daily.jstor.org/global-jellyfish-crisis-perspective/).∂ Jellies are opportunistic feeders, meaning they'll ingest just about anything: microscopic plankton, crustaceans, and fish larvae are all fair game.∂ They'll even consume other jellies, according to the [Smithsonian Institute](https://ocean.si.edu/ocean-life/invertebrates/jellyfish-and-comb-jellies).∂ **The absence of complex body parts allows jellies to adapt easily to changing ocean conditions.∂** Jellies aren't vulnerable to fluctuating temperature, acidity, and salinity like other marine species, [according to JSTOR Daily](https://daily.jstor.org/global-jellyfish-crisis-perspective/).∂ In the last 100 years, average ocean surface temperatures have risen by about 1.6 degrees Fahrenheit (0.9 degrees Celsius), according to the National Oceanic and Atmospheric Administration. Last year was the hottest on record for the seas.∂ Warmer waters, in turn, mean less oxygen. This double whammy severely hurts many marine creatures, like coral, but not jellies. In mid-latitudes, in fact, higher water temperatures lead jelly embryos and larvae to **develop more quickly,** and the animals **enjoy longer reproductive periods**, [according to Inside Climate News](https://insideclimatenews.org/species/invertebrates/jellyfish).

#### That’s devastating for the Chinese Navy

**Mizokami 17** [Kyle Mizokami, 12-4-2017, "China's Aircraft Carriers Have a Menace: Jellyfish Swarms," Popular Mechanics, https://www.popularmechanics.com/military/navy-ships/a14017901/china-aircraft-carriers-jellyfish-swarms/, accessed 10-31-2020]LHSBC

One of China's most intractable enemies **doesn’t even have a vertebrae—or a brain.**∂ Chinese scientists and engineers are devising new methods to destroy swarms of jellyfish before they can get into naval propulsion systems, halting ships dead in their tracks or overheating their engines. Ironically, this seems to be a problem of China’s own making. Its overfishing, especially of shark fisheries, is a contributing factor to the global jellyfish population explosion.∂ Engineers at the Liaoning Ocean and Fisheries Science Research Institute in Dalian, China are developing a so-called “jellyfish shredder” to deal with large swarms of the marine invertebrates. According to the [South China Morning Post](http://www.scmp.com/news/china/diplomacy-defence/article/2121812/why-humble-jellyfish-could-stop-chinas-aircraft), the device consists of a net hundreds of yards long lined with sharp steel blades. Towed behind a ship, the jellyfish shredder slices any jellyfish in its path into small pieces, decimating swarms of jellyfish and clearing a path for larger vessels.∂ It sounds ridiculous, but the jellyfish boom is a huge problem and not just for the People’s Liberation Army Navy. Swarms of jellyfish, some as large as an armchair, are becoming more and more frequent and posing a hazard to man-made objects. Jellyfish swarms have [closed down coastal coal and nuclear plants](https://www.theguardian.com/environment/2016/oct/13/power-stations-to-get-early-warning-against-jellyfish-invasions) in the United States, Sweden, the Philippines, the United Kingdom, and Japan, as intakes that suck up seawater to be used for coolant accidentally vacuum up large numbers of jellyfish, clogging them. Power plants affected by jelly swarms must switch off to clean them out. In the Philippines, millions of people lost electricity when the 1,000-megawatt Sual power plant was forced to shut down to remove 50 tons of jellyfish.∂ These jellyfish swarms also pose dangers to warships. In 2006, the aircraft carrier USS Ronald Reagan was incapacitated while visiting Brisbane, Australia due to [blubber jellyfish](https://www.montereybayaquarium.org/animal-guide/invertebrates/blubber-jelly) swarms. [Reportedly](https://books.google.com/books?id=hcpDDQAAQBAJ&pg=PT561&lpg=PT561&dq=uss+ronald+reagan+2006+jellyfish&source=bl&ots=e5Dg2PgI98&sig=S_bki26N1mP3hKDmAuaclvzdIUc&hl=en&sa=X&ved=0ahUKEwi5-oKO9PDXAhUD4mMKHXNsBVs4ChDoAQhRMAg#v=onepage&q=uss%20ronald%20reagan%202006%20jellyfish&f=false), cooling pipes for the ship’s nuclear reactor were clogged with the foot-wide jellies, necessitating an evacuation of the carrier.∂ China’s first aircraft carrier, Liaoning, was built in Dalian on the Yellow Sea and frequently exercises in the nearby body of water. The Yellow Sea has seen an explosion of jellyfish in recent years, particularly Nomura’s jellyfish, one of the largest marine invertebrates in the world. In 2009, a Japanese fishing trawler [capsized](https://qz.com/133251/jellyfish-are-taking-over-the-seas-and-it-might-be-too-late-to-stop-them/) after its nets became full of Nomura’s jellyfish, each of which can weigh up to 440 pounds. While Liaoning isn’t nuclear-powered, it probably does **suck in seawater to use as coolant**. If those seawater intakes are clogged, **systems can rapidly overheat,** causing **equipment burnouts and even fires.**

#### US Naval Power stops Great Power Conflicts

**Cropsey and McGrath 18** Seth Cropsey and Bryan McGrath January 2018 “Maritime Strategy in a New Era of Great Power Competition” <https://s3.amazonaws.com/media.hudson.org/files/publications/HudsonMaritimeStrategy.pdf> (senior fellow and director of the Center for American Seapower at Hudson Institute, founding Managing Director of The FerryBridge Group LLC (FBG), a niche consultancy specializing in Naval and national security issues)//Elmer

Introduction As a maritime nation, naval power is the U.S.’s most useful means of responding to distant crises, preventing them from harming our security or that of our allies and partners, and keeping geographically remote **threats from metastasizing into conflicts** that could approach our borders. A maritime defense demands a maritime strategy. As national resources are increasingly strained the need exists for a strategy that makes deliberate choices to connect ends (security) with means (money and the fleet it builds). This paper examines the need for a maritime strategy, discusses options, and offers recommendations for policy makers. After several decades of unchallenged world leadership, the United States once again faces great power **competition**, this time featuring two other world powers. China and Russia increasingly bristle under the constraints of the post-World War II systems of global trade, finance, and governance largely created by the United States and its allies, systems that the United States has protected and sustained to the economic and security benefit of its citizens and the citizens of other nations. Both China and Russia are demonstrably improving the quality of their armed forces while simultaneously acting aggressively toward neighboring countries, some of which are US treaty allies. Additionally, **both nations are turning their attention to naval operations** far from their own coasts, operations **designed to advance national interests that are often in tension with those of the United States**.1 For the past several decades, US national security strategy has not had to contend with great powers. Instead, it has concerned itself primarily with building alliances designed to manage regional security more efficiently by proxy, while devoting increasingly more resources to homeland defense and intelligence aimed at stemming acts of terror by Islamic radical organizations and their followers. To the extent that the US position of leadership in the world was not threatened, this strategy was reasonable, if imperfectly pursued. Such a strategy will no longer suffice in a world of great power competition, especially one in which powers of considerable—but unequal—strength are opposed. Unbalanced multi-polarity is an especially unstable condition, and the United States is not effectively postured to manage that instability. Henry Kissinger divides the concept of world order into two parts: a normative system that defines acceptable action, and a ‘balance of power’ arrangement that punishes the breach of such conventions2. As the underlying balance of forces shifts, states with different ideas of international order gain the power to reshape the system. Thucydides’ ancient insight holds true – the rise in power of one actor threatens all others. Where such threat exists and if the balance of power between states or coalitions approaches equilibrium, a “Cold War” between competing ideological camps occurs. In an unbalanced system, the stronger side is tempted to strike its weaker opponent while the balance of forces is favorable. Unbridled competition for supremacy defined Europe during its bloodiest periods. Europe’s 16th and 17th century religious wars between Catholics and Protestants and the global 20th century struggles between totalitarian ideologies and democracy both represent the natural end-state of unbalanced multipolar systems. Without norms to restrain states and force to uphold these norms, violence is very likely. Today’s international system is moving toward unbalanced multi-polarity. Unfortunately, the United States is not currently prepared to manage such an international environment. If Americans want to preserve their nation’s secure and prosperous position as the world’s great power, the United States must begin now to prepare strategically for what it will inevitably face. Otherwise, it will ultimately be forced into an increasingly limited number of unattractive options to sustain its position of leadership. There is little evidence that the people of the United States wish to see our position in the world diminished. The 2016 Presidential Election raised important questions about the degree to which globalization has served the interests of everyday Americans (and their perceptions thereof), while the two dominant US political parties have moved toward more protectionist policies, at least as articulated by their nominees. Opinion polling indicates the divided nature of the American public on issues like free trade and sustained foreign commitments.3 However, Americans remain cognizant of threats to the United States, and favor maintaining America’s position as a great power by sustaining a strong military.4 Moreover, it would be difficult to identify meaningful numbers of Americans who would sacrifice national security in favor of increased social spending, despite the continuing rise in non-discretionary spending in the federal budget. Americans understand that the US position of world leadership benefits the nation’s economy, its security, its allies, and the international order that has been the object of US foreign and defense policy for over a century. They know that their lives would be diminished if this position of global leadership were surrendered to an adversary or group of them. The paradox of the American experience is that the US is not simply a great power – it is an exceptional power, for which ideals count as much as strength. The American public, despite its aversion to foreign commitments, can rise to the occasion and respond to clear threats, as it has in both World Wars, the Cold War, and after September 11th. The job of the policymaker, therefore, is to ensure America remains a great power, so that when the occasion arises, it can act as an exceptional power. It is critical then, for US political leaders to begin thinking more strategically about protecting and advancing America's position in the face of growing great power competition. This monograph asserts that a strategy to support such a goal would necessarily be maritime in nature, leveraging this nation’s great **geographical advantages** in the service of its national power. Sharing land borders with only two nations—both of whom are friendly to the United States—and separated **from other great powers by vast oceans**, the United States enjoys a security position quite unlike that of any other nation. For over a century, it has been the unspoken (but doggedly pursued) national security aim of the United States to ensure that no power rise to prominence in Asia or Europe so as to occupy a position there as dominant as the United States’ position in the Western Hemisphere. Were this to occur, not only could that nation then lock the United States out of the resources and activity of that region, but it could also then eventually turn its attention to challenging our position in the Western Hemisphere.5 Underlying this approach is the reality that most the world’s activity does not occur in our own hemisphere, but in Asia and Europe. American interests in these regions— political, diplomatic, economic, and military—are considerable and growing. Protecting and sustaining those interests must remain a priority of American policy, and maritime strategy is an effective tool in doing so. Maritime strategy is a subset of grand strategy, and the relationship between the two is ably defined by Professor John B. Hattendorf of the Naval War College: “In its broadest sense, grand strategy is the comprehensive direction of power to achieve particular national goals. Within those terms, maritime strategy is the direction of all aspects of national power that relate to a nation’s interests at sea. The navy serves this purpose, but maritime strategy is not purely a naval preserve. Maritime strategy involves the other functions of state power that include diplomacy; the safety and defence of merchant trade at sea; fishing; the exploitation, conservation, regulation and defence of the exclusive economic zone at sea; coastal defence; security of national borders; the protection of offshore islands; as well as participation in regional and world-wide concerns relating to the use of oceans, the skies over the oceans and the land under the seas.6 It is wholly appropriate for the world’s dominant naval power—separated from its widely-flung interests by thousands of miles of open ocean—**to develop and execute coherent maritime strategy**. In a time of re-emerging great power competition, it is essential. The nation’s current maritime strategy 7 is, unfortunately, not up to the task. It focuses insufficiently on great power competition; it does not recognize the rise in importance of conventional forces in deterring great power war; it does not provide a theory of conventional deterrence appropriate to great powers and their likely objectives; it does not suggest **a posture for naval forces that acts as an effective deterrent**; its derived force structure is too small and short on effective logistic support; it does not place sufficient value on naval partnerships with geographically important nations which may not be traditional partners; and it is silent on the need for the nation to invest in a maritime industrial base that can enable an appropriate strategy. This monograph urges new thinking about maritime strategy, a strategy compatible with the United States’ responsibilities as the leader of the free world, as well as the world’s premier political, military, economic, and diplomatic power. Such a strategy would seek to protect and sustain those leadership positions in the face of renewed great power competition, competition that largely subsumes other, lesser security concerns. There will be those who view this approach as a return to “Cold War” strategic thinking, and we do not shy from this comparison. The United States acted for decades as a coherent strategic actor when faced with expansionist Soviet totalitarianism, and it must act with equal coherence and resolve to contest China and Russia’s brands of aggressive mercantilism, regional expansion, and contempt for established global order. There will be those who evaluate our suggestions in this paper and conclude that the nation cannot afford it, that the expense associated with moving to a maritime grand strategy would imbalance the traditional “ends, ways, means” approach to the making of strategy. And while the ends, ways, means approach is generally relevant to military and operational strategy, it is unsuited to the making of grand strategy for one very important reason. Unlike subordinate levels of strategy, grand strategy re-allocates, realigns, and re-orients a nation’s “means” to serve strategic “ends”. Military strategy starts with the proposition that there is a certain resource level available to pursue its ends. Grand strategy starts with the sum of the nation’s output capacity, and then determines how it can most effectively be allocated to the achievement of strategic goals. Short of war itself, there is nothing in American history that causes strategic realignment more reliably than a change in Administration, and we wish to be part of that dialogue. We argue here for a new theory of deterrence, one that revises the Cold War approach in which the Soviet Union was deterred from large-scale conventional attack by the threat of nuclear escalation. Under that rubric, one could justifiably say that America’s conventional deterrent was dependent on its strategic deterrent. Today, the decapitating “bolt from the blue” strike is even more remote than it was in the Cold War, and to the extent that nuclear exchange between great powers is conceivable, it is far more likely to flow from conventional conflict that has gone awry. Therefore, to deter nuclear war, we must deter conventional war. No aspect of American military power will be more critical to deterring either **nuclear** or conventional super-power **war than seapower.**

## DP

#### Reject democratic peace – 52 years of analysis and newest models

Grabmeier ’15 (Jeff; 9/3/15; Senior Director of Research and Innovation at Ohio State University, citing a 52-year study; Phys.org, “'Democratic peace' may not prevent international conflict,” <https://phys.org/news/2015-09-democratic-peace-international-conflict.html)>

Using a new technique to analyze **52 years of international conflict**, researchers suggest that there may be **no such thing** as a "democratic peace." In addition, a model developed with this new technique was found to predict international conflict five and even ten years in the future better than any existing model. Democratic peace is the widely held theory that democracies are less likely to go to war against each other than countries with other types of government. In the new study, researchers found that economic trade relationships and participation in international governmental organizations play a strong role in keeping the peace among countries. But democracy? Not so much. "That's a startling finding because the value of joint democracy in preventing war is what we thought was the closest thing to a law in international politics," said Skyler Cranmer, lead author of the study and The Carter Phillips and Sue Henry Associate Professor of Political Science at The Ohio State University. "There's been empirical research supporting this theory for the past 50 years. Even U.S. presidents have touted the value of a democratic peace, but it **doesn't seem to hold up**, at least the way we looked at it." The study appears this week in the Proceedings of the National Academy of Sciences. Cranmer's co-authors are Elizabeth Menninga, assistant professor of political science at the University of Iowa and recent Ph.D. graduate in political science at the University of North Carolina at Chapel Hill; and Peter Mucha, professor of mathematics in the College of Arts and Sciences at UNC-Chapel Hill. Along with casting doubt on democratic peace theory, the study also developed a new way to **predict levels** of international conflict that is **more accurate than any previous model**. The researchers used a new technique to examine all violent conflicts between countries during the period of 1948 to 2000. The result was a model of international conflict that was 47 percent better than the standard model at predicting the level of worldwide conflict five and even 10 years into the future. "The Department of Defense needs to know at least that far in advance what the world situation is going to be like, because it can't react in a year to changes in levels of conflict due to bureaucratic inertia and its longer funding cycle," Cranmer said. "Being able to have a sense of the global climate in five or 10 years would be extremely helpful from a policy and planning perspective." The researchers started the study with a famous idea posed by the philosopher Immanuel Kant back in 1795: that the world could enjoy a "perpetual peace" if countries would become more interconnected in three ways. The modern interpretation of those three ways is: Through the spread of democratic states, more economic interdependence through trade, and more joint membership in international governmental organizations, or IGOs. (Modern examples range from regional agricultural organizations to the European Union and NATO.) Many studies have looked at how these three elements, either together or separately, affect conflict between countries. But even when they were considered together, the impact of the three individual factors were considered additively. What makes this study unique is that the researchers were the first to use a new **statistical measure** developed by Mucha - called multislice community detection—to analyze **all three of these components** collectively. They were able to examine, for the first time, how each component was related to each other. For example, how membership in IGOs affected trade agreements between counties, and vice versa. "When we looked at these networks holistically, we found communities of countries that are similar not only in terms of their IGO memberships, or trade agreements, or in their democratic governments, but in terms of all these three elements together," Cranmer said. The separation between such communities in the world is what the researchers called "Kantian Fractionalization." "You might think of it as the number of cliques the world is split up into and how easy it is to isolate those cliques from one another," Cranmer said. But the deeper the separation between communities or cliques there are in the world at one time, the more dangerous the world becomes. By measuring these communities in the world at one specific time, the researchers could predict with **better accuracy** than ever before how many violent conflicts would occur in one, 5 or 10 years in the future. This study had a broad definition of conflict: any military skirmish where one country deliberately kills a member of another country. Many of the conflicts in this study were relatively small, but it also includes major wars. Predicting one year into the future, this new model was 13 percent better than the standard model at predicting levels of worldwide conflict. But it was 47 percent better at predicting conflict 5 and 10 years into the future. "We measured how fragile these networks are to breaking up into communities," Mucha said. "Remarkably, that fragility in a mathematical sense has a clear political consequence in terms of increased conflict." The linear relationship between higher levels of Kantian fractionalization and more future conflict was so strong that Cranmer couldn't believe it at first. "I threw up my hands in frustration when I first saw the results. I thought we surely must have made a mistake because you almost never see the kind of **clean, linear relationship** that we found outside of textbooks," Cranmer said. "But we confirmed that there is this strong relationship."

#### Robust empirical data.

Christopher Coyne and Rachel Mathers 2011 (Mercatus Center and Department of Economics, George Mason University; Department of Accounting, Economics, and Finance, Delaware State University, USA; “The Handbook on the Political Economy of War”; <https://drive.google.com/file/d/1eAPWvararR37CcoH5RXVA0zcjdqD5Pwu/view?usp=sharing>)

Democratic wars There is considerable evidence that the absence of war claim is incorrect. As Christopher Layne (2001, p. 801) notes, 'The most **damning indictment** of democratic peace theory, is that **it happens not to be true**: democratic states have gone to war with one another." For example, categorizing a state as democratic if it achieves a democracy score of six or more in the Polity dataset on regime type - as several analysts do - yields three inter-democratic wars: the American Civil War, the Spanish American War and the Boer War. This is something defenders of the theory readily admit - adopting relatively inclusive definitions of democracy, they themselves generate anywhere between a dozen and three dozen cases of inter-democratic war. In order to exclude these anomalies and thereby preserve the absence of war claim, the theory's defenders restrict their definitions of democracy. In the most compelling analysis to date, Ray (1993, pp. 256-9, 269) argues that no two democracies have gone to war with one another as long as a democracy is defined as follows: the members of the executive and legislative branches arc determined in fair and competitive elections, which is to say that at least two independent parties contest the election, half of the adult population is eligible to vole and the possibility that the governing party can lose has been established by historical precedent. Similarly, Doyle (1983a, pp. 216-17) rescues the claim by arguing that states" domestic and foreign policies must both be subject to the control of the citizenry if they are to be considered liberal. Russett, meanwhile, argues that his no war claim rests on defining democracy as a stale wilh a voting franchise for a substantial fraction of the population, a government brought to power in elections involving two or more legally recognized parties, a popularly elected executive or one responsible to an elected legislature, requirements for civil liberties including free speech and demonstrated longevity of at least three years (Russett 1993, pp. 14-16). Despite imposing these definitional restrictions, proponents of the democratic peace cannot exclude up to five major wars, a figure which, if confirmed, would invalidate the democratic peace by their own admission (Ray 1995, p. 27). The first is the **War of 1812** between Britain and the United States. Ray argues that it does not contradict the claim because Britain does not meet bis suffrage requirement. Yet this does not make Britain any less democratic than the United States at the time where less than half the adult population was eligible to vote. In fact, as Laync (2001, p. 801) notes, "the United States was not appreciably more democratic than un re formed Britain." This poses a problem for the democratic peace; if the United States was a democracy, and Ray believes it was, then Britain was also a democracy and the War of 1812 was an inter-democratic war. The second case is the **American Civil War.** Democratic peace theorists believe the United States was a democracy in 1861, but exclude the case on the grounds that it was a civil rather than interstate war (Russett 1993, pp. 16-17). However, a plausible argument can be made that the United Stales was not a state but a union of states, and that this was therefore a war between states rather than within one. Note, for example, that the term "United States" was plural rather than singular at the time and the conflict was known as the "War Between the States."7 This being the case, the Civil War also contradicts the claim.8 The Spanish-American and Boer wars constitute two further exceptions to the rule. Ray excludes the former because half of the members of Spain's upper house held their positions through hereditary succession or royal appointment. Yet this made Spain little different to Britain, which he classifies as a democracy at the time, thereby leading to the conclusion that the Spanish-American War was a war between democracies. Similarly, it is hard to accept his claim that the Orange Free State was not a democracy during the Boer War because black Africans were not allowed to vote when he is content to classify the United States as a democracy in the second half of the nineteenth century (Ray 1993. pp. 265, 267; Layne 2001. p. 802). In short, defenders of the democratic peace can only rescue their core claim through the selective application of highly restrictive criteria. Perhaps the most important exception is World War I, which, by virtue of the fact that Germany fought against Britain, France, Italy, Belgium and the United States, would count as five instances of war between liberal states in most analyses of the democratic peace.9 As Ido Oren (1995, pp. 178-9) has shown. Germany was widely considered lo be a liberal state prior to World War I: "Germany was a member of a select group of the most politically advanced countries, far more advanced than some of the nations that arc currently coded as having been "liberal' during that period." In fact, Germany was consistently placed toward the top of that group, "either as second only to the United States ... or as positioned below England and above France." Moreover, Doyle’s assertion that the case ought to be excluded because Germany was liberal domestically, but not in foreign affairs, does not stand up to scrutiny. As Layne (1994, p. 42) points out. foreign policy was "insulated from parliamentary control" in both France and Britain, two purportedly liberal states (see also Mcarshcimcr 1990, p. 51, fn. 77; Layne 2001, pp. 803 807). Thus it is difficult to classify Germany as non-liberal and World War I constitutes an imporiant exception to Ihe finding. Small numbers Even if restrictive definitions of democracy enable democratic peace theorists to uphold their claim, they render it unsurprising by reducing the number of democracies in any analysis. As several scholars have noted, there were only a dozen or so democracies in the world prior to World War I, and even fewer in a position to fight one another. Therefore, since war is a rare event for any pair of states, the fact that democracies did not fight one (Mearsheimer 1990, p. 50; Cohen 1994, pp. 214, 216; Layne 1994, p. 39; Henderson 1999, p. 212).10 It should be a source of even less surprise as the number of democracies and the potential for conflict among them falls, something that is bound to happen as the democratic bar rises. Ray\*s suffrage criterion, for example, eliminates two great powers - Britain and the United States - from the democratic ranks before World War I. thereby making the absence of war between democracies eminently predictable."

#### Democracy is an extension of civil society that’s used to legitimize anti-black violence

Sexton and Lee 06 (Jared Sexton, African American Studies Program, University of California, Irvine, CA, USA, Elizabeth Lee, Department of Geography, University of British Columbia, Vancouver, BC, Canada, “Figuring the Prison: Prerequisites of Torture at Abu Ghraib”, Editorial Board of Antipode, page 1013-1014)

The rituals of torture exposed at Abu Ghraib—staged events both reckless and deliberate, a whole theatrics of humiliation, terror, sexual degradation—provide, not contradiction or hypocrisy, but the necessary counterpart to the “American” principles of democracy, dignity, and freedom; what Zizek calls “the obscene underside of U.S. popular culture ... the disavowed beliefs, suppositions and obscene practices we pretend not to know about, even though they form the background of our public values” (Zizek 2004).11 In this sense, what the notorious images of frivolous brutality circulating throughout the global media environment evoke, however obliquely, is the ambient combat, and the attendant culture of authoritarianism, that operates without direct announcement and acknowledgment within the United States as an affirmation of its birthright in and as a slave society.12 This ancient internal warfare is foundational and constitutive; the primary division of humanity it enables launches the syntax of western modernity, the state(s) of democratic citizenship, the promise and compromise of civil society—not the division between the exploiters and the exploited or the rich and the poor, but rather the free and the enslaved, subject and object, person and property (Barrett 2006). The obscene underside of the popular culture, the “repression, torture, and sexual coercion that constitute the underbelly of a particular version of democracy, which has achieved dominance in the world” (Davis 2004:45), and the myriad peculiar institutions of social incarceration it has engendered, is the most intimate possession of black existence in the US—from the political and libidinal economies of chattel slavery (still determinate in current affairs despite wishful thinking from all quarters) to the official endorsements of institutionalized lynching (practices commandeered in recent generations by the proper authorities) and the codification of Jim Crow segregation (whose revival cancels apace the detours thrown up by the modern Civil Rights Movement) to the formation of the urban ghetto (which retains its powers of quarantine even in the aftermath of the “long hot summers” and the short flight of a fragile black lumpen bourgeoisie) to the rise of the modern day prison (whose ghastly presence supplies the hallmark of the so-called post-civil rights era) (Nast 2000).

## NEW CLIMATE

#### Zero impact to warming – there’s a laundry list of reasons

**Goklany 15** (Indur, PhD from Michigan State, Assistant Director of Programs, Science and Technology Policy at the DOI, represented the United States at the Intergovernmental Panel on Climate Change (IPCC) and during the negotiations that led to the United Nations Framework Convention on Climate Change, “CARBON DIOXIDE: The good news”, The Global Warming Policy Foundation, GWPF Report 18)

[figures omitted]

The **impacts of global warming** are generally estimated using chains of linked computer models. Each chain begins with a climate model, which itself is driven by a set of socioeconomic scenarios based on assumptions for population, economic development and technological change over the entire period of the analysis (often 50– 100 years or more). The climate model is followed by various biophysical, economic and other downstream models to estimate changes in different aspects of human 23 activity or welfare, for example agriculture, forestry, health or biodiversity. The **uncertain outputs** of each upstream model serve as the inputs of the subsequent downstream model, with the uncertainties **cascading down** the chain so that the individual streams of uncertainty combine into a regular torrent. For example, to estimate the impacts on agriculture and food security, the outputs of the climate model are fed into various crop models to estimate yields, which then are linked to economic models to estimate supply and demand for the various crops. Supply and demand are then reconciled via national, regional and global scale trade models.142 Notably, despite the cascade of uncertainties, to date **no climate change impact assessment** has provided an **objective estimate** of the cumulative uncertainty, starting with the socioeconomic scenarios through to the impact estimate. The ranges of uncertainty presented in the IPCC impact reports are generally based on the uncertainties only from using different climate scenarios. But these are much narrower than the true uncertainties that would have been estimated had the full cascade of uncertainties been considered. Models have not been validated One reason that doom-laden predictions about human wellbeing have failed is that orthodox climate scientists have neglected to apply the scientific method: specifically they have not checked their hypotheses and biases embodied in their models against empirical reality. As we have seen, simple reality checks show that environmental and human wellbeing is not currently deteriorating. Validation of these models using such reality checks would have limited their divergence from reality, and also reduce the uncertainties that are inevitably compounded as one progresses down the chain of models. Climate models overstate global warming Firstly, the global climate has not been warming as rapidly as projected in the IPCC assessment reports. Figure 5 compares observed global surface temperature data from 1986 through 2012 versus modelled results. It confirms that models have been running hotter than reality. But these are the projections that governments have relied on to justify global warming policies, including subsidies for biofuels and renewable energy while increasing the overall cost of energy to the general consumer – costs that disproportionately burden those that are poorer. A comparison of performance of 117 simulations using 37 models versus empirical data from the HadCRUT4 surface temperature data set indicates that the vast majority of the simulations/**models** have **overestimated warming**.143 The models indicated that the average global temperature would increase by 0.30±0.02◦Cper decade during the period from 1993 to 2012 but empirical data show an increase of only 0.14±0.06◦C per decade.144 Model performance was even worse for the more recent 15-year period of 1998–2012. Here the average modelled trend was 0.21±0.03◦C per decade, **quadruple the observed trend** of 0.05±0.08◦C. Considering the confidence interval, the observed trend is indistinguishable from no trend at all; that is, warming has, for practical purposes, halted. Even the IPCC acknowledges the existence of this ‘hiatus’.145 Moreover, the HadCRUT4 temperature database indicates that the global warming rate declined from 0.11◦C per decade from 1951–2012 to 0.04◦C per decade from 1998–2012.146 This is despite the fact that, per the IPCC, the anthropogenic greenhouse gas forcing for 2010 (2.25 W/m2) exceeded what was used in the models for 2010 (1.78–1.84 W/m2) by around 25%.147 Some have argued that satellite temperature data should be preferred over surface datasets. In fact, satellite coverage is more comprehensive and more representative of the Earth’s surface than is achievable using surface stations, even if the latter were to number in the thousands. A recent review paper notes that satellites can provide ‘unparalleled global- and fine-scale spatial coverage’ presumably because of ‘more frequent and repetitive coverage over a larger area than other observation means’.148 In addition, surface measurements are influenced by the measuring stations’ microenvironments, which will vary not only from station to station at any given time, but also over time at the very same station, as vegetation and man-made structures in their vicinity spring up, evolve and change.149 Satellite temperature data indicates that the globe has been warming at the rate of 0.12–0.14◦C per decade since 1979;150 by contrast, the IPCC assessments over the last 25 years have been projecting a warming trend of 0.2–0.4◦C per decade.151,152 The 25 differences between modelled trends and those from satellites and weather balloons are shown in Figures 6 and 7.153 Nevertheless, based on these chains of unvalidated computer models, orthodox thinkers on climate change claim that global warming will, among other things, lower food production, increase hunger, cause more extreme weather, increase disease, and threaten water supplies. The cumulative impact will, they claim, diminish living standards and threaten species, and if carbon dioxide and other greenhouse gases are not curbed soon, pose an existential threat to humanity and the rest of nature. Some claim it may already be too late.154 The group 350.org, for instance, agitates for reducing atmospheric carbon dioxide levels, currently at 400 ppm, to 350 ppm, a level the earth last experienced in 1988.155 But since then, **global GDP** per capita **has increased** 60%, infant **mortality** has **declined** 48%, **life expectancy** has **increased** by 5.5 years, **and the poverty headcount has dropped** from 43% to 17% despite a population increase of 40%. Nostalgia for a 350 ppm world seems somewhat misplaced, if not **downright perverse**.156,157 Climate models don’t do local well It is not clear what logical process was used to arrive at these allegations. It may stem from the fact that orthodox thinkers on climate, in the grip of confirmation bias, are unable or unwilling to acknowledge that, unless a climate or weather event is truly unprecedented then the default assumption – the ‘null hypothesis’ in scientific parlance – should be that it is part of normal climate variability rather than manmade global warming. Some have used the results of modelling exercises that purport to assess the future impacts, usually in the latter part of this century, and then ‘interpolated’ these results back to the present day.158,159,160 The first step in such an exercise relies on climate models to project the future climate. But we have seen that these models have failed the reality test with respect to globally averaged surface temperature over the past two decades or more. To compound matters, the performance of climate models relative to reality worsens as one attempts to project surface temperatures at smaller geographical scales. 27 Climate models don’t do precipitation well More importantly, the wellbeing of human beings and the rest of nature is probably more sensitive to changes in precipitation than to temperature, and **precipitation is highly variable** from spot to spot. But climate models perform even **worse for precipitation** than they do for temperature, regardless of the geographic scale. In fact, for several areas many models are unable to reliably hindcast past precipitation, let alone forecast the future.161,162 Notsurprisingly, precipitation projections using different models often contradict each other. For example, a recent study of annual precipitation changes in California using 25 model projections indicates that ‘12 projections show drier annual conditions by the 2060s and 13 show wetter.’163 Thus impact assessments that use as their starting point the outputs of these climate models cannot and should not be relied upon to develop policies, although they may have scientific diagnostic value for improving our understanding of climate mechanisms and processes. Adaptation methodology is flawed Failure to properly account for adaptation Even if climate models represented reality perfectly and were able to foretell the future climate, impact assessments would still be suspect. This is because most global warming impact assessments assume little or no endogenous (or autonomous) **adaptation**. For example, the vast majority of studies of global warming impacts on water resources do not incorporate any allowance for adaptive measures that might be taken to reduce those impacts, despite the fact that steps of this nature have been taken since time immemorial.164,165 For instance, the world’s oldest functioning dam, at Lake Homs in Syria, dates back to 1319 BC,166 and qanats, underground canals to convey water for human settlements and irrigation, were built in Persia as long ago as the first millennium BC.167 Similarly, of the many studies used by the IPCC to estimate future impacts on crop yields, 63% did not consider improvements in the agricultural sector’s adaptive capacity.168 Moreover, specific adaptive measures used in many global warming impact studies are based on surveys of available technologies from the 1990s. However, today suitable adaptation measures are both more **numerous and cheap**er.169 And because we are wealthier, these options are even more affordable.170 Consequently, our ability to adapt has **improved** markedly just in the past few decades or so.171 As proof, consider the previously noted global **increases in**, for example, **crop yields,** access to safer **water,** and **life expectancy** on one hand, and **reductions in poverty and mortality from** vector-borne **diseases and** extreme **weather** events on the other. These examples suggest that neglecting adaptive capacity and technological change can, over the course of several decades, lead to estimates of impacts that are too pessimistic by an order of magnitude or more.172 28 Another factor that is ignored in impacts assessments is the tremendous increase in our interconnectedness due to the internet, e-mail, text messages, and cell phones. As a result, the dissemination of knowledge is today far faster and wider than what was possible two or three decades ago. This increase in connectivity alone has **considerably enhanced** humanity’s adaptive capacity.173 Also ignored is the array of technologies that are collectively called ‘precision farming’: the growing ability to monitor plant growth, nutrient deficiencies and the environmental conditions at finer scales, combined with techniques that use GPS and drones to more precisely deliver nutrients and water to crops. Today these technologies can be afforded by wealthy farmers in rich countries. Over time, they should, like all other technologies, also diffuse around the world as their costs drop and as rising incomes make them more affordable. Such techniques should reduce agriculture’s demand for water. Because agriculture is responsible for about 70% of global water consumption, this ought to free up water for other human uses and substantially reduce water stress.174 A 20% increase in global agricultural water-use efficiency should, for example, translate into a global increase of 39% in water available for nonagricultural use.

#### Theiessen 11/2 Climate change not scary

https://www.aei.org/op-eds/climate-change-is-not-an-existential-threat/

At the Glasgow climate conference, President Biden declared climate change an “existential threat to human existence as we know it.” No, it’s not. **Climate change is** not a meteor hurtling toward Earth to destroy humanity. Rather, it is a chronic, **manageable** condition humanity can live with.

So argues Bjorn Lomborg, author of the book “[False Alarm: How Climate Change Panic Costs Us Trillions, Hurts the Poor, and Fails to Fix the Planet](https://www.amazon.com/gp/product/B0827TL851/ref=as_li_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=B0827TL851&linkCode=as2&tag=copenhagencon-20&linkId=1c425324307e54a40dd022056ccc776d).” “Fundamentally, we’ve got to stop the alarmists,” he tells me. A recent poll [found](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3918955) almost half of young Americans believe “**humanity is doomed**” because of climate change. This **is not true**. “Climate change is a problem, but not the end of the world,” Lomborg says. In fact, “things are a lot better than you think.”

**Even if we do nothing to reduce emissions, the world will not end**. Lomborg [points out](https://twitter.com/BjornLomborg/status/1449733794106384393) that, according to the **UN Intergovernmental Panel on Climate Change, “the impact of climate change is equivalent to 2.6 percent of GDP by the end of the century.** Instead of being 450 percent as rich in 2100, we’ll ‘only’ be 434 percent as rich.” By contrast, he says, a Nature study [finds](https://www.wsj.com/articles/climate-change-cost-economy-emissions-tax-per-person-net-zero-joe-biden-11634159179?mod=hp_opin_pos_3#cxrecs_s) that even if we fall short of Biden’s plan for net-zero American carbon emissions by 2050, and reduce emissions by 95 percent, we would end up losing 11.9 percent of US gross domestic product — or $11,300 per person per year — to avert a 2.6 percent loss in global GDP.