# NC

### Fw - Util

#### Pleasure is an intrinsic good.

**Moen ’16** – (Ole Martin, PhD, Research Fellow in Philosophy @ University of Oslo, "An Argument for Hedonism." Journal of Value Inquiry 50.2 (2016): 267). Modified for glang

Let us start by observing, empirically, that a widely shared judgment about intrinsic value and disvalue is that pleasure is intrinsically valuable and pain is intrinsically disvaluable. On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues**.** This inclusion makes intuitive sense, moreover, for **there is something undeniably good about the way pleasure feels and something undeniably bad about the way pain feels,** and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have. “Pleasure” and “pain” are here understood inclusively, as encompassing anything hedonically positive and anything hedonically negative. 2 The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. If you tell me that you are heading for the convenience store, I might ask: “What for?” This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?” This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: “Well, I want it for the pleasure of drinking it.” If I then proceed by asking “But what is the pleasure of drinking the soda good for?” the discussion is likely to reach an awkward end. The reason is that the pleasure is not good for anything further; it is simply that for which going to the convenience store and buying the soda is good. 3 As Aristotle observes: “**We never ask what her**~~is~~ **end is in being pleased, because we assume that pleasure is choice worthy in itself.**”4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” We take for granted that if something is painful, we have a sufficient explanation of why it is bad. If we are onto something in our everyday reasoning about values, it seems that pleasure and pain are both places where we reach the end of the line in matters of value. Although pleasure and pain thus seem to be good candidates for intrinsic value and disvalue, several objections have been raised against this suggestion: (1) that pleasure and pain have instrumental but not intrinsic value/disvalue; (2) that pleasure and pain gain their value/disvalue derivatively, in virtue of satisfying/frustrating our desires; (3) that there is a subset of pleasures that are not intrinsically valuable (so-called “evil pleasures”) and a subset of pains that are not intrinsically disvaluable (so-called “noble pains”), and (4) that pain asymbolia, masochism, and practices such as wiggling a loose tooth render it implausible that pain is intrinsically disvaluable. I shall argue that these objections fail.

**Thus, the standard is *maximizing pleasure and minimizing pain*.**

**Prefer this standard for the following reasons:**

**One. Consequentialism must be used in public deliberation. It is impossible to consider the intentions of every individual or quantify the intentions of any one action because each person has a different set of values or reason for their decision. Thus, consequentialism is the only feasible method of determining the morality of an action.**

**Two. Utilitarianism respects the basis of human nature. Humans naturally value things that bring happiness and pleasure and aim to mitigate things that cause pain and discomfort, and utilitarianism is the only value criterion that takes this innate human need into account.**

**Three. Maximizing expected wellbeing is a prerequisite to any other moral framework because you must have life before you can achieve anything else. If you are dead, you can’t do anything at all, making this a logical prerequisite.**

**Under util, extinction is the worse impact because all life has innate value and extinction eliminates the chance for future generations of humans to even exist.**

### 1 - Innovation

#### Competition in space between private entities is key because it lowers costs and barriers of entry for other companies while also increasing technological innovation

Lizzy Gurdus, FEB 27 **2021**, CNBC, “Private companies such as SpaceX are driving costs down for everyone in the space race, says man behind UFO ETF”, [https://www.cnbc.com/2021/02/27/private-companies-like-spacex-are-driving-industry-costs-down-ceo.html] ahs ja

Private space companies are paving the industry’s path to profits, says the man behind the Procure Space ETF (UFO). By taking part in the rapidly developing “space race,” billionaire-backed entities such as Elon Musk’s SpaceX and Jeff Bezos’s Blue Origin are lowering costs across the board, ProcureAM CEO Andrew Chanin told CNBC’s “ETF Edge” this week. “They’re able to get the cost of launch down and that’s going to allow more companies to send things into outer space cheaper,” Chanin said in the Wednesday interview. “They’re really opening up the entire environment for space companies and future would-be space companies to lower those barriers of entry.” They’re also lowering costs for government-sponsored space programs by competing amongst themselves for NASA contracts, Chanin said. “They’re actually freeing up more of NASA’s budget to be able to invest in other areas of space, he said. “This competition I think is very healthy. Not necessarily every company’s going to be a winner, but hopefully this competition can drive down prices and also let the best technologies win.” NASA now also has contracts with more than 300 publicly traded U.S. companies, said Chanin, whose UFO ETF counts Loral Space & Communications and Gilat Satellite Networks as its top two holdings. “It’s not just necessarily a pure-play space company that might get a contract,” the CEO said. “It’s really opening up opportunities for everyone.” That’s why it’s important to look beyond name recognition in this particular area of investing, Matthew Bartolini, State Street’s head of SPDR Americas research, said in the same “ETF Edge” interview. State Street offers the SPDR S&P Kensho Final Frontiers ETF (ROKT), the first space ETF to hit the market. The fund’s top three holdings are Maxar Technologies, Virgin Galactic and Aerojet Rocketdyne. Bartolini recommended “to not just look at the high-flying names like SpaceX or Blue Origin that are in the private markets, but showcase what companies in the public markets help supply them.” Aerojet Rocketdyne, which defense giant Lockheed Martin is buying in hopes of competing with private space companies, played a key role in Blue Origin’s New Shepard rocket launch, Bartolini said. “You can see the derivative effects of a private company impacting the public markets just from that one example of Lockheed and Aerojet,” he said. “It helps underscore the opportunity that you’re seeing in space.” As space companies embrace greater efficiency, more government support and more commercial applications on Earth in areas such as satellite technology, that opportunity is likely to grow and continue to filter into public markets, Bartolini said. Morgan Stanley has said the global space industry could produce revenues of over $1 trillion by 2040. Current global revenues are roughly $350 billion. UFO and ROKT both fell by more than 1% on Friday. UFO is up over 14% year to date, while ROKT is up nearly 2%.

#### This innovation is happening right now– the aff only harms progress

Seetha Raghava, August 4th **2021**, UFC TODAY, “The Impact of Innovation in the New Era of Space Exploration”, [https://www.ucf.edu/news/the-impact-of-innovation-in-the-new-era-of-space-exploration/] ahs ja

Every once in a while, a confluence of discoveries, events and initiatives results in a breakthrough so significant that it propels the entire world to a higher level, redefining what is possible in so many different fields. This breakthrough is taking centerstage now, as the new era of space exploration — catalyzed by increasing launch access — dawns upon us. The surge of innovation that comes with this will create new opportunities and inspire the next generation of doers. When this happens, boundaries between scientific and social impact are blurred. Innovation leading to scientific discovery can benefit society in the same way that social innovation can diversify and support scientific innovators, who can contribute to global progress. To ride this wave of progress, we must all participate and innovate in the new era of space exploration. The intersection of space exploration, innovation and impact isn’t a new phenomenon. In the past, technology developments and spin-offs from space research have consistently found their way into communities worldwide sometimes with lifesaving benefits. The International Space Station supports experiments that have led to discoveries and inventions in communication, water purification, and remote guidance for health procedures and robotic surgeries. Satellite-enabled Earth observation capabilities that monitor natural disasters, climate and crops often support early warnings for threats and mitigation strategies. Space exploration has always been relevant to everyone no matter the discipline or interest. Commercialization of space has been key in many ways to the current boost in “firsts” over the last few years. It has spurred innovation in launch vehicles and related technologies that led to firsts in vertical-takeoff-vertical landing rocket technology, reusability of rocket boosters and privately developed crewed missions to orbit. Concurrently, NASA has continued to captivate our imagination with the first flight of a helicopter in another world, a mission to return an asteroid sample to Earth and sending a probe to make the closest ever approach to the sun. While we celebrate the scientific progress, there is a vastly important question that we all need to focus on: How can we drive the surge in innovation offered by increased access to space, to benefit humankind? Access to low-Earth orbit, and eventually human exploration of space, is a portal to achieve many impactful outcomes. The numbers and completion rate of microgravity experiments conducted by scientists will be greatly increased as a range of offerings in suborbital flights provide more opportunities to advance critical research in health, agriculture, energy, and more. Lunar, planetary, and even asteroid exploration may lead to discoveries of new materials — busting the limitations now imposed on capabilities for energy, transportation, and infrastructure or creating new sensors and devices that enhance safety on Earth. Space tourism —one can hope — has the power to potentially create an awareness of our oneness that may lead to social change. But much like all scientific endeavors, we cannot ignore the importance of pre-emptively identifying and mitigating negative impacts of new ventures some of which may have already taken shape. We need to consider space debris that threatens the very access that facilitates it, safety and rescue readiness to support increased crewed missions and space tourism, national security, and effects of light pollution on astronomy. Much of these can be approached and mitigated with new concepts and ideas that have already been set in motion. One thing is for certain, space has always been the inspiration for the next generation of innovators and creative thinkers. Architects of new ideas in this era will inspire many more. Ingenuity must also come from academic and research institutions building a new space-ready generation through innovative curriculum, scholarships, and research opportunities for key fields at all levels. Most of all, engaging participation is a responsibility anyone can take by steering the conversation and gathering ideas on how we can make this era one of positive benefit for all, while making opportunities inclusive to all.

#### Stronger Innovation solves Extinction.

**Matthews 18** Dylan Matthews 10-26-2018 “How to help people millions of years from now” <https://www.vox.com/future-perfect/2018/10/26/18023366/far-future-effective-altruism-existential-risk-doing-good> (Co-founder of Vox, citing Nick Beckstead @ Rutgers University)//Re-cut by Elmer

If you care about improving human lives, you should overwhelmingly care about those quadrillions of lives rather than the comparatively small number of people alive today. The 7.6 billion people now living, after all, amount to less than 0.003 percent of the population that will live in the **future**. It’s reasonable to suggest that those **quadrillions** of future people have, accordingly, **hundreds of thousands of times** more moral weight than those of us living here **today** do. That’s the basic argument behind Nick Beckstead’s 2013 Rutgers philosophy dissertation, “On the overwhelming importance of shaping the far future.” It’s a glorious mindfuck of a thesis, not least because Beckstead shows very convincingly that this is a conclusion any plausible moral view would reach. It’s not just something that weird utilitarians have to deal with. And Beckstead, to his considerable credit, walks the walk on this. He works at the Open Philanthropy Project on grants relating to the far future and runs a charitable fund for donors who want to prioritize the far future. And arguments from him and others have turned “long-termism” into a very vibrant, important strand of the effective altruism community. But what does prioritizing the far future even mean? The most **literal** thing it could mean is preventing human **extinction**, to ensure that the species persists as long as possible. For the long-term-focused effective altruists I know, that typically means identifying concrete threats to humanity’s continued existence — like unfriendly artificial intelligence, or a pandemic, or global warming/out of control geoengineering — and engaging in activities to prevent that specific eventuality. But in a set of slides he made in 2013, Beckstead makes a compelling case that while that’s certainly **part** of what caring about the far future entails, approaches that address **specific threats** to humanity (which he calls “**targeted**” approaches to the far future) have to **complement** “**broad**” approaches, where instead of trying to **predict** what’s going to kill us all, you just **generally try to keep civilization running as best it can**, so that it is, as a whole, well-equipped to deal with **potential** extinction events in the **future**, not just in 2030 or 2040 but in 3500 or 95000 or even 37 million. In other words, caring about the far future **doesn’t mean just paying attention to low-probability risks of total annihilation**; it also means **acting on pressing needs now**. For example: We’re going to be **better prepared** to prevent extinction from **AI** or a **supervirus** or **global warming** if society as a whole makes **a lot of scientific progress**. And a significant bottleneck there is that the vast majority of humanity doesn’t get high-enough-quality education to engage in scientific research, if they want to, which reduces the **odds that we have enough trained scientists to come up with the breakthroughs** we need as a civilization to survive and thrive. So maybe one of the **best thing**s we can do for the **far future** is to improve school systems — here and now — to harness the group economist Raj Chetty calls “lost Einsteins” (**potential innovators** who are thwarted by poverty and inequality in rich countries) and, more importantly, the hundreds of millions of kids in developing countries dealing with even worse education systems than those in depressed communities in the rich world. What if living ethically for the far future means living ethically now? Beckstead mentions some other broad, or very broad, ideas (these are all his descriptions): Help make computers faster so that people everywhere can work more efficiently Change intellectual property law so that technological innovation can happen more quickly Advocate for open borders so that people from poorly governed countries can move to better-governed countries and be more productive Meta-research: improve **incentives** and **norms** in **academic work** to better advance human knowledge Improve education Advocate for political party X to make future people have values more like political party X ”If you look at these areas (economic growth and technological progress, access to information, individual capability, social coordination, motives) a lot of everyday good works contribute,” Beckstead writes. “An implication of this is that a lot of everyday good works are good from a broad perspective, even though hardly anyone thinks explicitly in terms of far future standards.” Look at those examples again: It’s just a list of what normal altruistically motivated people, not effective altruism folks, generally do. Charities in the US love talking about the lost opportunities for innovation that poverty creates. Lots of smart people who want to make a difference become scientists, or try to work as teachers or on improving education policy, and lord knows there are plenty of people who become political party operatives out of a conviction that the moral consequences of the party’s platform are good. All of which is to say: Maybe effective altruists aren’t that special, or at least maybe we don’t have access to that many specific and weird conclusions about how best to help the world. If the far future is what matters, and generally trying to make the world work better is among the best ways to help the far future, then effective altruism just becomes plain ol’ do-goodery.

# On Case

### AT: Kant

**Kantianism is anti-Black racism: This is not about Kant’s personal views of non-European peoples, this is about his transcendental system. Kant’s transcendental philosophy depends on the character and capacity individuals have for moral reasoning. Black people may have value, but they lack moral worth and the character necessary for rational moral thought in Kant’s critical philosophy. This is an independent reason to vote negative – accessibility is a prerequisite to debate existing as an activity**

**Eze 97[1]** Over and beyond Buffon or Linnaeus, **Kant**, in his transcendental philosophy (e.g., *Critique of Pure Reason),* **describes ways of orienting oneself geographically in space, mathematically in space and time, and, logically, in the construction of both categories into other sorts of consistent whole**. In the *Observations on the Feeling o/the Beautiful and Sublime,* a work which ought to be considered as primarily anthropological, **Kant shows the**theoretic **transcendental**philosophical **position**at work **when he attempts to**work out and **a particular (moral)** relates to *humans generally,* and how it **differs between**men and women, and among different **races**. For example, "feeling" as it appears in the title of the work refers to a specific refinement of character which is *universally* properly human: that is, belonging to human nature as such. And we recall that for Kant "human nature" resides in the developmental expression of rational-moral "character." Since **it is that** the specificity of **, "human nature *proper,"* then** dignity **the fact that one has struggled to develop one's, or one's· humanity, as universal**. Kant states: In order to assign man into a system of living nature, and thus to characterize him, no other alternative is left than this: that he has a character which he himself creates by being capable of perfecting himself after the purposes chosen by himself. Through this, he, as an animal endowed with reason *(animale rationabile)* can make out of himself a rational animal *(animale rationale).* "**Character**," as the moral formation of personality, **seems to be that on which basis humans have worth**and dignity, and one consequence of this is that **those**peoples and **"races" to whom** or pseudo **rational-** - either because of their non-"white" skin color (evidence of lack of "true talent") or because of the presence of phlogiston in their blood or both - **are**seriously naturally or **inherently attainments**, evidence of which is **superior "white" skin**color, the absence of phlogiston in their blood, **and**the superior **European civilization**. **While the** he or **she has**true "**worth**." According to Kant: everything has either a value or a worth. What has value has a substitute which can replace it as its equivalent; but whatever is, on the other hand, exalted above all values, and thus lacks an equivalent ... has no merely relative value, that is, a price, but rather an inner worth,. that is dignity ... Hence morality, and humanity, in so far as it is capable of morality, can alone possess dignity. **If non-white peoples lack "true"** (Kant believes, for example, that the character of the *Mohr* is made up of *imagination* rather than reason) **and therefore lack "true" *feeling* and moral sense,** , or dignity., for example, **can accordingly** full full and "true" **.** For Kant **European humanity is *the* humanity***par excellence.*

### AT: Property

#### Private space mining and ownership allowed now

Williams 20 [(Matt Williams, Reporter) “Trump signs an executive order allowing mining the moon and asteroids,” Phys Org, April 13, 2020, <https://phys.org/news/2020-04-trump-moon-asteroids.html>] TDI

Trump signs an executive order allowing mining the moon and asteroidsIn 2015, the Obama administration signed the [U.S. Commercial Space Launch Competitiveness Act](https://www.congress.gov/bill/114th-congress/house-bill/2262/text) (CSLCA, or H.R. 2262) into law. This bill was intended to "facilitate a pro-growth environment for the developing commercial space industry" by making it legal for American companies and citizens to own and sell resources that they extract from asteroids and off-world locations (like the moon, Mars or beyond). On April 6th, the Trump administration took things a step further by signing an [executive order](https://www.space.com/trump-moon-mining-space-resources-executive-order.html) that formally recognizes the rights of private interests to claim resources in [space](https://phys.org/tags/space/). This order, titled "[Encouraging International Support for the Recovery and Use of Space Resources](https://www.whitehouse.gov/presidential-actions/executive-order-encouraging-international-support-recovery-use-space-resources/)," effectively ends the decades-long debate that began with the signing of [the Outer Space Treaty](https://www.universetoday.com/20590/moon-for-sale/) in 1967.

### AT: Space War

#### No space war.

**Bowen 18** [Bleddyn Bowen, Lecturer in International Relations at the University of Leicester. The Art of Space Deterrence. February 20, 2018. https://www.europeanleadershipnetwork.org/commentary/the-art-of-space-deterrence/]

Space is often an **afterthought** or a miscellaneous ancillary in the **grand strategic views** of **top-level decision-makers**. A **president** may **not care** that **one satellite may be lost** or go dark; it may cause panic and **Twitter**-based **hysteria** for the space community, of course. But the **terrestrial context** and consequences, as well as the political stakes and symbolism of any exchange of hostilities in space **matters more**. The political and media dimension can magnify or minimise the perceived consequences of losing specific **sat**ellite**s** **out of** all **proportion** to their **actual strategic effect**.

#### official statements prove

**Colby 16** (Elbridge, Senior Fellow at the Center for a New American Security, “From Sanctuary to Battlefield: A Framework for a U.S. Defense and Deterrence Strategy for Space”)SLAIR

But such a threat is of substantially decreasing credibility. In today’s much different context, no one really believes that a limited space attack would necessarily or even plausibly be a prelude to **total nuclear war**. Would the United States respond with a major strategic strike if China or Russia, in the context of a regional conflict with the United States, struck discriminately at implicated U.S. space assets in the attempt to defang U.S. power projection, all while leaving the broader U.S. space architecture alone? Not only does such a massive response seem unlikely – it would be positively foolish and irresponsible. Furthermore, would other nations regard attacks on assets the United States was actively employing for a local war as off limits to attack? Indeed, any reasonable observer would have to judge that such discriminate attacks on U.S. space assets would not necessarily be illegitimate, as, by the United States’ own admission, it relies greatly on its space architecture for conventional power projection. Moreover, **official** U.S. **statements** on how the United States would respond to attacks on its space assets – to the limited extent such statements exist and the degree to which those given are clear – offer **no indication** it would respond massively to such **strikes**.53 Perhaps more to the point, **senior** responsible U.S. **officials** have telegraphed that the United States would indeed not necessarily respond massively to attacks against its space assets.54 In light of these factors, any U.S. space **deterrence strategy** that is predicated on an all-or-nothing retaliation to space attacks will become increasingly incredible and thus decreasingly effective – and indeed might even invite an adversary’s challenge in order to puncture or degrade U.S. credibility. In other words, since space assets can increasingly be attacked segmentally and discriminately rather than totally, this means that credibly and effectively deterring such attacks requires a less than total response. Since the threat is more like a rapier than a broadsword, the United States needs rapier-like ripostes of its own. Accordingly, the United States Any U.S. space deterrence strategy that is predicated on an all-or-nothing retaliation to space attacks will become increasingly incredible and thus decreasingly effective. needs a more discriminate deterrent for space. In particular, it needs a flexible deterrent capable of meeting the intensifying challenge of deterring an adversary – and particularly a highly capable potential opponent like China or Russia – from attacking (or attacking to a sufficient degree) those U.S. space assets needed for the United States to effectively and decisively project power and ultimately prevail in a conflict in a distant theater. At the same time, this flexible deterrent must contribute to dissuading such an enemy from striking at the nation’s broader military and civilian space architecture, and in particular those core strategic space assets needed for central deterrence.

### No Impact: Nuke War

#### Small arsenals and tests prove no extinction from nuke war

**Frankel et al. 15** [Dr. Michael J. Frankel is a senior scientist at Penn State University’s Applied Research Laboratory, where he focuses on nuclear treaty verification technologies, is one of the nation’s leading experts on the effects of nuclear weapons, executive director of the Congressional Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack, led development of fifteen-year global nuclear threat technology projections and infrastructure vulnerability assessments; Dr. James Scouras is a national security studies fellow at the Johns Hopkins University Applied Physics Laboratory and the former chief scientist of DTRA’s Advanced Systems and Concepts Office; Dr. George W. Ullrich is chief technology officer at Schafer Corporation and formerly senior vice president at Science Applications International Corporation (SAIC), currently serves as a special advisor to the USSTRATCOM Strategic Advisory Group’s Science and Technology Panel and is a member of the Air Force Scientific Advisory Board. 04-15-15. “The Uncertain Consequences of Nuclear Weapons Use.” The Johns Hopkins University Applied Physics Laboratory. DTIC. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a618999.pdf>] Justin

Scientific work based on real data, rather than models, also cast **additional doubt on the basic premise**. Interestingly, publication of several contradictory papers describing experimental observations actually predated Schell’s work. In 1973, nine years before publication of The Fate of the Earth, a published report failed to find any ozone depletion during the **peak period of atmospheric nuclear testing**.26 In another work published in 1976, attempts to measure the actual ozone depletion associated with **Russian megaton-class detonations and Chinese nuclear tests** were also **unable** to detect any significant effect.27 At present, with the **reduced arsenals and a perceived low likelihood** of a large-scale exchange on the scale of Cold War planning scenarios, official concern over nuclear ozone depletion has essentially fallen off the table. Yet continuing scientific studies by a small dedicated community of researchers suggest the potential for dire consequences, even for relatively small regional nuclear wars involving Hiroshimasize bombs. Nuclear Winter The possibility of catastrophic climate changes came as yet another surprise to Department of Defense scientists. In 1982, Crutzen and Birks highlighted the potential effects of high-altitude smoke on climate,29 and in 1983, a research team consisting of Turco, Toon, Ackerman, Pollack, and Sagan (referred to as TTAPS) suggested that a five-thousand-megaton strategic exchange of weapons between the United States and the Soviet Union could effectively spell national suicide for both belligerents.30 They argued that a massive nuclear exchange between the United States and the Soviet Union would inject copious amounts of soot, generated by massive firestorms such as those witnessed in Hiroshima, into the stratosphere where it might reside indefinitely. Additionally, the soot would be accompanied by dust swept up in the rising thermal column of the nuclear fireball. The combination of dust and soot could scatter and absorb sunlight to such an extent that much of Earth would be engulfed in darkness sufficient to cease photosynthesis. Unable to sustain agriculture for an extended period of time, much of the planet’s population would be doomed to perish, and—in its most extreme rendition—humanity would follow the dinosaurs into extinction and by much the same mechanism.31 Subsequent refinements by the TTAPS authors, such as an extension of computational efforts to three-dimensional models, continued to produce qualitatively similar results. The TTAPS results were severely criticized, and a lively debate ensued between passionate critics of and defenders of the analysis. Some of the technical objections critics raised included the TTAPS team’s neglect of the potentially significant role of clouds;32 lack of an **accurate model** of coagulation and rainout;33 inaccurate capture of feedback mechanisms;34 “fudge factor” fits of micrometer-scale physical processes assumed to hold constant for changed atmospheric chemistry conditions and uniformly averaged on a grid scale of hundreds of kilometers;35 the dynamics of firestorm formation, rise, and smoke injection;36 and estimates of the optical properties and total amount of fuel available to generate the assumed smoke loading. In particular, more **careful analysis of the range of uncertainties associated with the widely varying published estimates of fuel quantities and properties suggested a possible range of outcomes encompassing much milder impacts than anything predicted by TTAPS**.37 Aside from the technical issues critics raised, the five-thousand-megaton baseline exchange scenario TTAPS envisioned was rendered obsolete when the major powers decreased both their nuclear arsenals and the average yield of the remaining weapons. With the demise of the Soviet Union, the nuclear winter issue essentially fell off the radar screen for Department of Defense scientists, which is not to say that it completely disappeared from the scientific literature. In the last few years, a number of analysts, including some of the original TTAPS authors, suggested that even a “modest” regional exchange of nuclear weapons—one hundred explosions of fifteenkiloton devices in an Indian–Pakistani exchange scenario—might yet produce significant worldwide climate effects, if not the full-blown “winter.”38 However, such concerns have failed to gain much traction in Department of Defense circles.

#### Empirics – we’ve nuked ourselves 2,000 times and the largest event was only 1/1000th as powerful as natural disasters

**Eken 17** [Mattias Eken - PhD student in Modern History at the University of St Andrews. “The understandable fear of nuclear weapons doesn’t match reality”. 3/14/17. <https://theconversation.com/the-understandable-fear-of-nuclear-weapons-doesnt-match-reality-73563>] // Re-Cut Justin

Nuclear weapons are unambiguously the most destructive weapons on the planet. Pound for pound, they are the most lethal weapons ever created, capable of killing millions. Millions live in fear that these weapons will be used again, with all the potential consequences. However, the destructive power of these weapons **has been vastly exaggerated**, albeit for good reasons. Public fear of nuclear weapons being used in anger, whether by terrorists or nuclear-armed nations, has risen once again in recent years. **This is** in no small part **thanks to the current political climate** between states such as the US and Russia and the various nuclear tests conducted by North Korea. But whenever we talk about nuclear weapons, it’s easy to get carried away with doomsday scenarios and apocalyptic language. As the historian Spencer Weart once argued: “**You say ‘nuclear bomb’ and everybody immediately thinks of the end of the world.**” Yet the means necessary to produce a nuclear bomb, let alone set one off, remain incredibly complex – and while the damage that would be done if someone did in fact detonate one might be very serious indeed, **the chances that it would mean “the end of the world” are vanishingly small**. In his 2013 book Command and Control, the author Eric Schlosser tried to scare us into perpetual fear of nuclear weapons by recounting stories of near misses and accidents involving nuclear weapons. One such event, the 1980 Damascus incident, saw a Titan II intercontinental ballistic missile explode at its remote Arkansas launch facility after a maintenance crew accidentally ruptured its fuel tank. Although the warhead involved in the incident didn’t detonate, Schlosser claims that “if it had, much of Arkansas would be gone”. But that’s not quite the case. The nine-megaton thermonuclear warhead on the **Titan II** missile had a blast radius of 10km, or an area of about 315km². The state of Arkansas spreads over 133,733km², meaning the weapon **would have caused destruction across 0.2% of the state.** That would naturally have been a terrible outcome, but certainly not the catastrophe that Schlosser evokes. Claims exaggerating the effects of nuclear weapons have become commonplace, especially after the September 11 terrorist attacks in 2001. In the early War on Terror years, Richard Lugar, a former US senator and chair of the Senate Foreign Relations Committee, argued that terrorists armed with nuclear weapons pose an existential threat to the Western way of life. What he failed to explain is how. It is by no means certain that a single nuclear detonation **(or even several)** would do away with our current way of life. Indeed, **we’re still here despite having nuked our own planet more than 2,000 times** – a tally expressed beautifully in this video by Japanese artist Isao Hashimoto). While the 1963 Limited Test Ban Treaty forced nuclear tests underground, **around 500 of** all **the nuclear weapons detonated were unleashed in the Earth’s atmosphere**. This includes the world’s largest ever nuclear detonation, the 57-megaton bomb known as **Tsar Bomba**, detonated by the Soviet Union on October 30 1961. Tsar Bomba was more than 3,000 times more powerful than the bomb dropped on Hiroshima. That is immense destructive power – but as one physicist explained, **it’s only “one-thousandth the force of an earthquake, one-thousandth the force of a hurricane”.** The Damascus incident proved how incredibly hard it is to set off a nuclear bomb and the limited effect that would have come from just one warhead detonating. Despite this, some scientists have controversially argued that an even limited all-out nuclear war might lead to a so-called nuclear winter, since the smoke and debris created by very large bombs could block out the sun’s rays for a considerable amount of time. To inflict such ecological societal annihilation with weapons alone, we would have to detonate hundreds if not thousands of thermonuclear devices in a short time. Even in such extreme conditions, the area actually devastated by the bombs would be limited: for example, **2,000 one-megaton explosions with a destructive radius of five miles each would directly destroy less than 5% of the territory of the US**. Of course, if the effects of nuclear weapons have been greatly exaggerated, there is a very good reason: since these weapons are indeed extremely dangerous, any posturing and exaggerating which intensifies our fear of them makes us less likely to use them. But it’s important, however, to understand why people have come to fear these weapons the way we do. After all, nuclear weapons are here to stay; they can’t be “un-invented”. If we want to live with them and mitigate the very real risks they pose, we must be honest about what those risks really are. Overegging them to frighten ourselves more than we need to keeps nobody safe.

#### Analysis of historical volcano activity disproves nuclear winter – an eruption 5 times the size of a regional nuclear exchange dissipated in just 2 years

**Reisner et al. 18** [Jon Reisner, atmospheric researcher at LANL Climate and Atmospheric Sciences; Gennaro D'Angelo, UKAFF Fellow and member of the Astrophysics Group at the School of Physics of the University of Exeter, Research Scientist with the Carl Sagan Center at the SETI Institute, currently works for the Los Alamos National Laboratory Theoretical Division; Eunmo Koo, scientist in the Computational Earth Science Group at LANL, recipient of the NNSA Defense Program Stockpile Stewardship Program award of excellence; Wesley Even, R&D Scientist at CCS-2, LANL, specialist in computational physics and astrophysics; Matthew Hecht is a member of the Computational Physics and Methods Group in the Climate, Ocean and Sea Ice Modelling program (COSIM) at LANL, who works on modeling high-latitude atmospheric effects in climate models as part of the HiLAT project; Elizabeth Hunke, Lead developer for the Los Alamos Sea Ice Model, Deputy Group Leader of the T-3 Fluid Dynamics and Solid Mechanics Group at LANL; Darin Comeau, Scientist at the CCS-2 COSIM program, specializes in high dimensional data analysis, statistical and predictive modeling, and uncertainty quantification, with particular applications to climate science; Randall Bos is a research scientist at LANL specializing in urban EMP simulations; James Cooley is a Group Leader within CCS-2. 03/16/2018. “Climate Impact of a Regional Nuclear Weapons Exchange: An Improved Assessment Based On Detailed Source Calculations.” Journal of Geophysical Research: Atmospheres, vol. 123, no. 5, pp. 2752–2772] // Re-Cut Justin

To quantitatively account for natural and forced variability in the climate system, we created two ensembles, one for the natural, unforced system and a second ensemble using a range of realistic vertical profiles for the BC aerosol forcing, consistent with our detailed fire simulation. The control ensemble was generated using small atmospheric temperature perturbations (Kay et al., 2015). Notably, the overall spread of anomalies in both ensembles is very similar. These ensembles were then used to create “super ensembles” using a statistical emulator, which allows a robust statistical comparison of our simulated results with and without the carbon forcing. Our primary result is the **decreased impact on global climate indices**, such as global average surface temperature and precipitation, relative to standard scenarios considered in previous work (e.g., Robock et al., 2007a; Stenke et al., 2013; Mills et al., 2014; Pausata et al., 2016). With our finding of **substantially less BC aerosol being lofted to stratospheric heights** (e.g., over a factor of four less than in most of the scenarios considered by previous studies), these globally averaged anomalies drop to **statistically insignificant levels** after the first several years (Figures 14 and 16). Our results are generally comparable to those predicted by other studies that considered exchange scenarios in which only about 1 Tg of soot is emitted in the upper troposphere (Robock et al., 2007a; Mills et al., 2008; Stenke et al., 2013). There are more subtle suggestions of regional effects, notably in the extent of the region over which sea surface temperature differences between ensembles remain significant in the final years of simulation (Figure 17). Further work is required to adequately analyze these and other potential regional effects. Historical analysis of several large volcanic eruptions and a recent large fire also supports this result. For example, Timmreck et al. (2010) claim that nonlinear aerosol effects of the Toba Tuff eruption 74,000 years ago helped **limit significant global cooling** impacts to a **two-year time period** and that any cooling beyond this time period could be due to other effects. It should be noted that this eruption was estimated to have produced **106 Tg** of ash and comparable amounts of other gases, such as sulfur dioxide (SO2), while the estimated amount of soot produced by a regional exchange is on the order of **10 Tg**, or **5 orders of magnitude smaller than the ash** (not including gases) **produced by the Toba eruption**. Noting that a nuclear exchange is not identical to volcanic events, it has been asserted that BC particles produced by fires should have a **greater impact on absorbing solar radiation** than even has the significantly larger amounts of ash and various gases produced by large eruptions (e.g., Robock and Toon 2010). Likewise, recent work in analyzing BC emissions from large fires suggests that in such fires, similar to large volcanic eruptions, **coating of soot particles with other particles** in convective eddies **tends to increase their size and hence increase their subsequent rainout** (China et al., 2013) before they can reach the stratosphere. In fact, the recent study of Pausata et al. (2016) found that growth of BC aerosol via coagulation with organic carbon significantly reduce the particles’ lifetime in the atmosphere