### 1NC --- OFF

#### Interpretation: “appropriation of outer space” means to have exclusive control over

TIMOTHY JUSTIN TRAPP, JD Candidate @ UIUC Law, ’13, TAKING UP SPACE BY ANY OTHER MEANS: COMING TO TERMS WITH THE NONAPPROPRIATION ARTICLE OF THE OUTER SPACE TREATY UNIVERSITY OF ILLINOIS LAW REVIEW [Vol. 2013 No. 4]

The issues presented in relation to the nonappropriation article of the Outer Space Treaty should be clear.214 The ITU has, quite blatantly, created something akin to “property interests in outer space.”215 It allows nations to exclude others from their orbital slots, even when the nation is not currently using that slot.216 This is directly in line with at least one definition of outer-space appropriation.217 [\*\*Start Footnote 217\*\*Id. at 236 (“Appropriation of outer space, therefore, is ‘the exercise of exclusive control or exclusive use’ with a sense of permanence, which limits other nations’ access to it.”) (quoting Milton L. Smith, The Role of the ITU in the Development of Space Law, 17 ANNALS AIR & SPACE L. 157, 165 (1992)). \*\*End Footnote 217\*\*]The ITU even allows nations with unused slots to devise them to other entities, creating a market for the property rights set up by this regulation.218 In some aspects, this seems to effect exactly what those signatory nations of the Bogotá Declaration were trying to accomplish, albeit through different means.219

#### Violation – Satellite usage is NOT exclusive control or use

Johnson 20[Christopher D. Johnson 2020, Secure World Foundation"The Legal Status of MegaLEO Constellations and Concerns About Appropriation of Large Swaths of Earth Orbit" No Publication, https://swfound.org/media/206951/johnson2020\_referenceworkentry\_thelegalstatusofmegaleoconstel.pdf]/ISEE

This Does Not Constitute Possession, or Ownership, or Occupation The use of LEO by satellite constellations is substantially similar to the use of GSO, and therefore permissible. In each region, individual actors are given permission - either from a national administrator or from an international governing body (the ITU) via a national administer–to use precoordinated subsections of space. In a way that is overwhelmingly similar to the use of orbital slots in GSO, the placement of spacecraft into orbits in LEO or higher orbits does not constitute possession, ownership, or occupation of those orbits. This is because States (and their companies) have been occupying orbital slots in GSO for decades, and these uses of GSO have never been accused of “appropriating” GSO. The users have never claimed to be appropriating GSO, and their exercising of rights to use GSO is respected by other actors in the space domain. This is the same situation for other orbits, including LEO and other non-Geostationary orbits. And while GSO locations are relatively stable (subject to space weather and other perturbations, and require stationkeeping), spacecraft in LEO are actually moving through space and are not stationary, so it is even more difficult to see this use by constellations as occupation, much less appropriation. Moreover, Space Situational Awareness (SSA) and Space Traffic Management (STM) will allow other uses to use these orbits, and nothing about the use of any one user necessarily precludes others. Lastly, there is no intention by operators of constellations to exclusively occupy, must less possess or appropriate, these orbits. Would not the appropriation of outer space be an intentional, volutional act? No such intention can be found in the operators of global constellations.

#### Limits --- any other model of the topic is massive and just allows aff’s to have something to do with space and private entities --- appropriation is the ONLY limiting word in the topic --- Intent to exclude AND contextual topic wording means you err heavily NEG

#### Voter for fairness and education.

### 1NC --- OFF

#### Plan: Megaconstellations in low-Earth Orbit by private entities except for Space-Base Solar Power are unjust.

#### SBSP is a mega constellation --- tech development proves

Oberhaus 21[Daniel Oberhaus, Daniel Oberhaus is a staff writer at Wired covering space exploration and energy. His first book, Extraterrestrial Languages (MIT Press, 2019), is about the art and science of interstellar communication.August 18, 2021, “Innovation Frontier Project” https://innovationfrontier.org/space-solar-power-an-extraterrestrial-energy-resource-for-the-u-s/]/ISEE

More recently, very large-scale manufacturing of space hardware has been given another boost by the emergence of satellite mega-constellations. These are networks of hundreds of satellites in low-Earth orbit that are typically designed to provide broadband access across the entire planet. The largest planned constellation is SpaceX’s Starlink network, which has already been approved for 12,000 satellites and is currently petitioning the FCC to permit up to 30,000 additional satellites for the network.91 Since the company frst started launching operational Starlink satellites in 2019, it has single handedly doubled the number of operational satellites in orbit. By the time it completes its 12,000 satellite constellation, SpaceX will have increased the total number of operational satellites in orbit by a factor of six.92 Achieving the satellite production cadence that is required to create a mega constellation like Starlink would have been impossible with conventional satellite manufacturing techniques. By standardizing the spacecraft hardware, however, SpaceX was able to mass manufacture its internet satellites and now produces more than 30 tons of operational satellites with a total of 500-600 kW of power generation capacity at its facilities every month.93 This is roughly the cadence that would be required to build a commercial SSP system and is a critical proof of concept that it is possible to build substantial amounts of flight-ready space hardware through the use of modular, standardized components.

#### SBSP is key to global energy security

Katete 21[Esther Katete, Esther is a Content Writer at GreenMatch. She has an educational background in Business Administration and Marketing and a passion for sustainability. 12-17-2021, "Is Space-Based Solar Power Our Future? (2022)," No Publication, [https://www.greenmatch.co.uk/blog/2020/02/space-based-solar-power]Sachin recut](https://www.greenmatch.co.uk/blog/2020/02/space-based-solar-power%5dSachin%20recut) ISEE

Current Global Energy Consumption and Trends The world’s energy consumption is only growing. According to a report by the University of Oxford’s Our World in Data, on the global primary energy consumption, the current world consumption is over 160,000 TWh annually. Solar energy contributes only 585 TWh. Although there is an increase in renewable energy solutions, investments, and usage, oil, coal, and gas still generate more than 80% of the global energy that is consumed - with solar energy generating less than 1%. Between 2004 and 2015, investments in renewable energy increased by 600% from £36.2 billion (US$46.7 billion) to £220.6 billion (US$284.8 billion). Current predictions indicate that the world population will reach 9.7 billion by 2050. With the increase in population, the world energy consumption is also predicted to grow by 50% by 2050. In addition, climate change impacts are accelerating. Although we generate a big percentage of the world energy from fossil fuels, fossil fuels contribute significantly to the increase of climate change. Comparatively, solar energy is the safest source of energy today - though it still only contributes a small percentage of the global energy production. The death rates from solar production are 1,230 times lower than coal, and it has one of the lowest CO2 emissions, at 5g CO2 eq per kWh. Why Space-Based Solar Power? Space-based solar power has several benefits; unlike solar panels on our roofs that can only generate electricity during the day, space-based solar power can generate continuous electricity, 24 hours a day, 99% of the year. This is because, unlike Earth, the space environment does not have night and day, and the satellites are in the Earth's shadow for only a maximum of 72 minutes per night. Space-based solar panels can generate 2,000 gigawatts of power constantly. This is 40 times more energy than a solar panel would generate on Earth annually. This is also several folds higher than the efficiency of solar panels today. What’s more, is that space-based solar power would generate 0% greenhouse gas emissions unlike other alternatives energy like nuclear, coal, oil, gas, and ethanol. The current source of energy that generates the lowest CO2 is nuclear power, which generates CO2 of 5g CO2 eq per kWh. Space-based solar power generates almost 0% hazardous waste to our environment compared to nuclear power.

#### Alternative forms of energy are key to solving for climate

Lee 20 [Dr Hoesung Lee, Chair of the Intergovernmental Panel on Climate Change, and Dr Fatih Birol, Executive Director of the International Energy Agency July 31, 2020, "Energy is at the heart of the solution to the climate challenge — IPCC," No Publication, https://www.ipcc.ch/2020/07/31/energy-climatechallenge/]/ISEE

The coronavirus pandemic has brought immense disruption to our world, destroying lives and livelihoods. But it is also reminding us that there are some challenges we cannot tackle alone. Limiting the spread of the virus has required everyone to act collectively to make life safer for all of us. This holds true for the other great crisis the world faces – untamed levels of greenhouse gas emissions that are already bringing increasingly dangerous consequences. Our climate challenge is a shared global challenge – and it is largely an energy challenge. Energy accounts for over two-thirds of global greenhouse gas emissions. This means energy must be at the heart of any solution. There is no time to lose. Analysis by the Intergovernmental Panel on Climate Change (IPCC) clearly shows us that global emissions need to be reduced to net-zero within the next few decades to avoid a dangerous increase in global temperatures. The coronavirus pandemic is resulting in a drop in emissions this year, but that came at an unacceptable human and economic cost – and there are already signs that emissions are rebounding as economies reopen. The economic recovery following the 2008 global financial crisis brought with it the biggest jump in emissions in history. The world cannot afford to repeat that mistake. In order to reach our global climate and sustainable energy goals, we need to quickly put emissions into sharp structural decline. This requires a dramatic acceleration in the transitions to clean, sustainable energy that are already underway in many countries and industries. The good news is we already have affordable, reliable technologies that can put the peak in global emissions behind us and start the drive down to net zero. The spectacular rise of renewable technologies like solar panels and wind turbines in recent years has shown us what is possible. Deployed quickly and on a major scale, the clean energy technologies we have at our disposal right now can bring about the kind of decline in energy-related emissions that would put the world on track for our longer-term climate goals. The ambitious recovery plans that governments are pursuing to counter the damage caused by the pandemic offer a unique opportunity to drive much greater investment in key energy technologies such as more efficient vehicles and buildings, renewables and state-of-the art electricity grids. According to recent analysis by the International Energy Agency (IEA), together with the International Monetary Fund, a combination of policy actions and targeted investments over the next three years could bring about a sustainable recovery, boosting global economic growth, creating millions of jobs and making 2019 the definitive peak in global emissions.

#### Climate Change is existential

Ng ’19 [Yew-Kwang; May 2019; Professor of Economics at Nanyang Technology University, Fellow of the Academy of Social Sciences in Australia and Member of the Advisory Board at the Global Priorities Institute at Oxford University, Ph.D. in Economics from Sydney University; Global Policy, “Keynote: Global Extinction and Animal Welfare: Two Priorities for Effective Altruism,” vol. 10, no. 2, p. 258-266; RP]

Catastrophic climate change Though by no means certain, CCC causing global extinction is possible due to interrelated factors of non‐linearity, cascading effects, positive feedbacks, multiplicative factors, critical thresholds and tipping points (e.g. Barnosky and Hadly, [2016](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0005); Belaia et al., [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0008); Buldyrev et al., [2010](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0016); Grainger, [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0027); Hansen and Sato, [2012](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0029); IPCC [2014](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0031); Kareiva and Carranza, [2018](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0033); Osmond and Klausmeier, [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0056); Rothman, [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0066); Schuur et al., [2015](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0069); Sims and Finnoff, [2016](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0072); Van Aalst, [2006](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0079)).[7](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-note-1009_67) A possibly imminent tipping point could be in the form of ‘an abrupt ice sheet collapse [that] could cause a rapid sea level rise’ (Baum et al., [2011](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0006), p. 399). There are many avenues for positive feedback in global warming, including: the replacement of an ice sea by a liquid ocean surface from melting reduces the reflection and increases the absorption of sunlight, leading to faster warming; the drying of forests from warming increases forest fires and the release of more carbon; and higher ocean temperatures may lead to the release of methane trapped under the ocean floor, producing runaway global warming. Though there are also avenues for negative feedback, the scientific consensus is for an overall net positive feedback (Roe and Baker, [2007](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0065)). Thus, the Global Challenges Foundation ([2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0026), p. 25) concludes, ‘The world is currently completely unprepared to envisage, and even less deal with, the consequences of CCC’. The threat of sea‐level rising from global warming is well known, but there are also other likely and more imminent threats to the survivability of mankind and other living things. For example, Sherwood and Huber ([2010](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0071)) emphasize the adaptability limit to climate change due to heat stress from high environmental wet‐bulb temperature. They show that ‘even modest global warming could … expose large fractions of the [world] population to unprecedented heat stress’ p. 9552 and that with substantial global warming, ‘the area of land rendered uninhabitable by heat stress would dwarf that affected by rising sea level’ p. 9555, making extinction much more likely and the relatively moderate damages estimated by most integrated assessment models unreliably low. While imminent extinction is very unlikely and may not come for a long time even under business as usual, the main point is that we cannot rule it out. Annan and Hargreaves ([2011](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0004), pp. 434–435) may be right that there is ‘an upper 95 per cent probability limit for S [temperature increase] … to lie close to 4°C, and certainly well below 6°C’. However, probabilities of 5 per cent, 0.5 per cent, 0.05 per cent or even 0.005 per cent of excessive warming and the resulting extinction probabilities cannot be ruled out and are unacceptable. Even if there is only a 1 per cent probability that there is a time bomb in the airplane, you probably want to change your flight. Extinction of the whole world is more important to avoid by literally a trillion times.

#### AND autonomous outsourcing---extinction

**Klare & Perry ’21** — Michael Klare, Five College, professor emeritus of peace and world security studies, and director of the Five College Program in Peace and World Security Studies, B.A. and M.A. from Columbia University and a Ph.D. from the Graduate School of the Union Institute, serves on the board of the Arms Control Association and advises other organizations; Lucas Perry, interviewer; (July 30th 2021; “Michael Klare on the Pentagon’s view of Climate Change and the Risks of State Collapse”; *Future of Life Institute*; <https://futureoflife.org/2021/07/30/michael-klare-on-the-pentagons-view-of-climate-change-and-the-risks-of-state-collapse/?cn-reloaded=1>; //LFS—JCM)

Lucas Perry: So, some sense of lethal autonomous weapons is potentially exacerbating or catalyzing the speed at which the ladder of escalation is moved through.

Michael Klare: No question about it. Many factors are contributing to that. The speed of weaponry, the introduction of hypersonic missiles, which cuts down flight time from 30 minutes to five minutes, the fact that wars are being conducted in what they call multiple domains simultaneously: cyber, space, air, sea, and ground, that no commander can know what’s happening in all of those domains and make decisions. So, you have to have what they want to create, a super brain called the Joint All-Domain Command and Control System, the JADC2 system, which will collect data from sensors all over the planet and compress it into simplified assessments of what’s happening, and then tell commanders, here are your choices, one, two, and three, and you have five seconds to choose, and if not, we’ll pick the best one and we’ll be linked directly to the firers to launch weapons. This is what the future will look like, and they’re testing this now. It’s called Project Convergence.

Lucas Perry: So, how do you see all of this affecting the risks of human extinction and of existential risks?

Michael Klare: I’m deeply concerned about this inclination to rely more on machines to make decisions of life and death for the planet. I think everybody should be worried about this, and I don’t think enough attention is being paid to these dangers of automating life and death decision-making, but this is moving ahead very rapidly and I think it does pose enormous risks. The reason that I’m so worried is that I think the computer assisted decision-making will have a bias towards military actions.

Humans are imperfect and sometimes we make mistakes. Sometimes we get angry and we go in the direction of being more violent and brutal. There’s no question about that, but we also have a capacity to say, stop, wait a minute, there’s something wrong here and maybe we should think twice and hold back. And, that’s saved us on a number of occasions from nuclear extinction. I recommend the book Gambling with Armageddon by Martin Sherwin, a new account of the Cuban Missile Crisis day by day, hour by hour account, and which it was clear that the US and Russia came very close, extremely close to starting a nuclear war in 1962, and somebody said, “Wait a minute, let’s just think about this. Let’s not rush into this. Let’s give it another 24 hours to see if we can come up with a solution.”

Adlai Stevenson apparently played a key role in this. I fear that the machines we designed are not going to have that kind of thinking built into them, that kind of hesitancy, that second thinking. I think the machines are going to be designed… The algorithms that inhabit them are going to reflect the most aggressive possible outcomes, and that’s why I fear that we move closer to human extinction in a crisis than before, and because of the time of decision-making is going to be so compressed that humans are going to have very little chance to think about this.

Lucas Perry: So, how do you view the interplay of climate change and autonomous weapons as affecting existential risk?

Michael Klare: Climate change is just going to make everything on the planet more stressful in general. It’s going to create a lot of stress, a lot of catastrophes occurring simultaneously and creating a lot of risk events happening that people are going to have to be dealing with, and they’re going to create a lot of hard, difficult choices. Let’s say you’re the president, you’re the commander in chief, and you have multiple hurricanes striking and fires striking the United States, that’s hardly an unlikely outcome, at the same time that there’s a crisis with China and Russia occurring where war would be a possible outcome. There’s a naval clash at sea in the South China Sea or something happening on the Ukraine border, and meanwhile, Nigeria is breaking apart and India and Pakistan are at the verge of war.

These are very likely situations in another 10 to 20 years if climate change proceeds the way it is. So, just the complexity of the environment, the stress that people will be under, the decisions they’re going to have to make swiftly between do we save Miami, or do we save Tokyo? Do we save Los Angeles, or do we save New York, or do we save London? We only have so many resources. In these conditions, I think the inclination is going to be to rely more on machines to make decisions and to carry out actions, and that I think has inherent dangers in it.

Lucas Perry: Do you and/or the Pentagon have a timeline for… How much and how fast is the instability from climate change coming?

Michael Klare: This is a progression. We’re on that path, so there’s no point at which you could say we’ve reached that level. It’s just an ever increasing level of stress.

Lucas Perry: How do you see the world in five or 10 years given the path that we’re currently on?

Michael Klare: I’m pessimistic about this, and the reason I am pessimistic is because if you go back and read the very first reports of the Intergovernmental Panel on Climate Change, the IPCC, their very first reports, and they would give a series of projections based on their estimates of the pace of greenhouse gas emissions. If they go this high, then you have these projections. If they go higher, then these projections out to 2030, 2040, 2050, we’ve all seen these charts.

So, if you go back to the first ones, basically we’re living in 2021 what they said were the worst case projections for 2040 to 2050 by and large. So, we’re moving into the danger zone. So, what I’m saying is we’re moving into the danger zone much, much faster than the most worst case scenarios that scientists were talking about 10 years ago, or 20 years ago, and if that’s the case, then we should be very, very worried about the pace at which this is occurring because we’re off the charts now from those earlier predictions of how rapidly sea level rise was occurring, desertification was occurring, heat waves. We’re living in a 2050 world now. So, where are we going to be in a 2030? We’re going to be in a 2075 world and that world was a pretty damn scary world.

### 1NC --- OFF

#### Death impacts are necrophilia that results in extinction---vote NEG to reject death impacts---that’s a gateway issue

Dr. Erich Seligmann Fromm 64 (Dr. Erich Seligmann Fromm was a German social psychologist, psychoanalyst, sociologist, humanistic philosopher, and democratic socialist, 1964, accessed 12/28/21, “Creators and Destroyers”)AGabay

\*language modification is denotated with brackets

People are aware of the possibility of nuclear war; they are aware of the destruction such a war could bring with it--and yet they seemingly make no effort to avoid it. Most of us are puzzled by this behavior because we start out from the premise that people love life and fear death. Perhaps we should be less puzzled if we questioned this premise. Maybe there are many people who are indifferent to life and many others who do not love life but who do love death. There is an orientation which we may call love of life (biophilia); it is the normal orientation among healthy persons. But there is also to be found in others a deep attraction to death which, following Unamuno's classic speech made at the University of Salamanca (1938), I call **necrophilia**. It is the attitude which a Franco general, Millán Astray, expressed in the slogan "Long live death, thus provoking Unamuno’s protest against this "necrophilous and senseless cry." Who is a necrophilous person? He is one who is **attracted** to and fascinated by all that is not alive, to all that is **dead**; to corpses, to decay, to feces, to dirt. Necrophiles are those people who love to talk about sickness, burials, **death**. They come to life precisely when they can talk about death. A clear example of the pure necrophilous type was Hitler. He was fascinated by destruction, and the smell of death was sweet to [them] him. While in the years of success it may have appeared that he wanted only to destroy those whom he considered his enemies, the days of the Götterdämmerung at the end showed that his deepest satisfaction lay in witnessing total and absolute destruction: that of the German people, of those around [them] him, and of [themselves] himself. The necrophilous dwell in the past, never in the future. Their feelings are essentially sentimental; that is, they nurse the memory of feelings which they had yesterday--or believe that they had. They are cold, distant, devotees of "law and order." Their values are precisely the reverse of the values we connect with normal life; not life, but death **excites** and satisfies them. If one wants to understand the influence of [persons] men like Hitler and Stalin, it lies precisely in their unlimited capacity and willingness to kill. For this they' were loved by the necrophiles. Of the rest, many were afraid of them and so preferred to admire, rather than to be aware of, their fear. Many others did not sense the necrophilous quality of these leaders and saw in them the builders, saviors, good fathers. If the necrophilous leaders had not pretended that they were builders and protectors, the number of people attracted to them would hardly have been sufficient to help them seize power, and the number of those repelled by them would probably soon have led to their downfall. While life is characterized by growth in a structured, functional manner, the necrophilous principle is all that which does not grow, that which is mechanical. The necrophilous person is driven by the **desire** to transform the organic into the inorganic, to approach life mechanically, as if all living persons were things. All living processes, feelings, and thoughts are transformed into things. Memory, rather than experience--having, rather than being--are what counts. The necrophilous person can relate to an object--a flower or a person--only if he possesses it; hence, a threat to his possession is a threat to [themselves] himself; if he loses possession he loses contact with the world. That is why we find the paradoxical reaction that he would rather lose life than possession, even though, by losing life, he who possesses has ceased to exist. He loves control, and in the act of controlling he kills life. He is deeply afraid of life, because it is disorderly and uncontrollable by its very nature. The woman who wrongly claims to be the mother of the child in the story of Solomon's judgment is typical of this tendency; she would rather have a properly divided dead child than lose a living one. To the necrophilous person justice means correct division, and they are willing to kill or die for the sake of what they call, justice. "Law and order" for them are idols, and everything that threatens law and order is felt as a satanic attack against their supreme values. The necrophilous person is attracted to darkness and night. In mythology and poetry (as well as in dreams) he is attracted to caves, or to the depth of the ocean, or depicted as being blind. (The trolls in Ibsen's Peer Gynt are a good example.) All that is away from or directed against life attracts [them] him. He wants to return to the darkness {23} of the womb, to the past of inorganic or subhuman existence. He is essentially oriented to the past, not to the future, which he hates and fears. Related to this is his craving for certainty. But life is never certain, never predictable, never controllable; in order to make life controllable, it must be transformed into **death**; death, indeed, is the only thing about life that is certain to [them] him. The necrophilous person can often be recognized by his looks and his gestures. He is cold, his skin looks dead, and often he has an expression on his face as though he were smelling a bad odor. (This expression could be clearly seen in Hitler's face.) He is orderly and obsessive. This aspect of the necrophilous person has been demonstrated to the world in the figure of Eichmann. Eichmann was fascinated by order and death. His supreme values were obedience and the proper functioning of the organization. He transported Jews as he would have transported coal. That they were human beings was hardly within the field of his vision; hence, even the problem of his having hated or not hated his victims is irrelevant. He was the perfect bureaucrat who had transformed all life into the administration of things. But examples of the necrophilous character are by no means to be found only among the inquisitors, the Hitlers and the Eichmanns. There are any number of individuals who do not have the opportunity and the power to kill, vet whose necrophilia expresses itself in other and (superficially seen) more harmless ways. An example is the mother who will always be interested in her child's sickness, in his failures, in dark prognoses for the future; at the same time she will not be impressed by a favorable change nor respond to her child's joy, nor will she notice anything new that is growing within [them] him. We might find that her dreams deal with sickness, death, corpses, blood. She does not harm the child in any obvious way, yet she may slowly strangle the child's joy of life, his faith--in growth, and eventually infect [them] him with her own necrophilous orientation. My description may have given the impression that all the features mentioned here are necessarily found in the necrophilous person. It is true that such divergent features as the wish to kill, the worship of force, the attraction to death and dirt, sadism, the wish to transform the organic into the inorganic through "order" are all part of the same basic orientation. Yet so far as individuals are concerned, there are considerable differences with respect to the strength of these respective trends. Any one of the features mentioned here may be more pronounced in one person than in another. Furthermore, the degree to which a person is necrophilous in comparison with his biophilous aspects and the degree to which a person is aware of necrophilous tendencies and rationalizes them vary considerably from person to person. Yet the concept of the necrophilous type is by no means an abstraction or summary of various disparate behavior trends. Necrophilia constitutes a **fundamental orientation**; it is the one answer to life that is in complete opposition to life; it is the most morbid and the most dangerous among the orientations to life of which [person] man is capable. It is true perversion; while living, not life but death is loved--not growth, but destruction. The necrophilous person, if he dares to be aware of what he feels, expresses the motto of his life when he says: "Long live death!" The opposite of the necrophilous orientation is the biophilous one; its essence is love of life in contrast to love of death. Like necrophilia, biophilia is not constituted by a single trait but represents a total orientation, an entire way of being. It is manifested in a person's bodily processes, in his emotions, in his thoughts, in his gestures; the biophilous orientation expresses itself in the whole [person] man. The person who fully loves life is attracted by the process of life in all spheres. He prefers to construct, rather than to retain. He is capable of wondering, and he prefers to see something new to the security of finding the old confirmed. He loves the adventure of living more than he does certainty. His approach to life is functional rather than mechanical. He sees the whole rather than only the parts, structures rather than summations. He wants to mold and to influence by love, by reason, by his example--not by force, by cutting things apart, by the bureaucratic manner of administering people as if they were things. He enjoys life and all its manifestations, rather than mere excitement. Biophilic ethics has its own principle of good and evil. Good is all that serves life; evil is all that serves death. Good is reverence for life (this is the main thesis of Albert Schweitzer, one of the great representatives of the love of life--both in his writings and in his person), and all that enhances life. Evil is all that stifles life, narrows it down, {24} cuts it into pieces. Thus it is from the standpoint of life-ethics that the Bible mentions as the central sin of the Hebrews: "Because thou didst not serve thy Lord with joy and gladness of heart in the abundance of all things." The conscience of the biophilous person is not one of forcing oneself to refrain from evil and to do good. It is not the superego described by .Freud, a strict taskmaster employing sadism against oneself for the sake of virtue. The biophilous conscience is motivated by its attraction to life and joy; the moral effort consists in strengthening the life-loving side in oneself. For this reasons the biophile does not dwell in remorse and guilt, which are, after all, only aspects of self-loathing and sadness. He turns quickly to life and attempts to do good. Spinoza's Ethics is a striking example of biophilic morality. "Pleasure," he says, "in itself is not bad but good; contrariwise, pain in itself is bad." And in the same spirit: "A free [**person**] man thinks of death least of all things; and his wisdom is a **meditation** not of death but of **life**." Love of life underlies the various versions of humanistic philosophy. In various conceptual forms these philosophies are in the same vein as Spinoza's; they express the principle that the same man loves life; that [peoples] man's aim in life is to be attracted by all that is alive and to separate [themselves] himself from all that is dead and mechanical. The dichotomy of biophilia-necrophilia is the same as Freud's life-and-death instinct. I believe, as Freud did, that this is the most fundamental polarity that exists. However, there is one important difference. Freud assumes that the striving toward death and toward life are two biologically given tendencies inherent in all living substance that their respective strengths are relatively constant, and that there is only one alternative within the operation of the death instinct--namely, that it can be directed against the outside world or against oneself. In contrast to these assumptions I believe that necrophilia is not a normal biological tendency, but a pathological phenomenon--in fact, the most malignant pathology that exists in mail. What are we, the people of the United States today, with respect to necrophilia and biophilia? Undoubtedly our spiritual tradition is one of love of life. And not only this. Was there ever a culture with more love of "fun" and excitement, or with greater opportunities for the majority to enjoy fun and excitement? But even if this is so, fun and excitement is not the same as joy and love of life; perhaps underneath there is indifference to life, or attraction to death? To answer this question we must consider the nature of our bureaucratized, industrial, mass civilization. Our approach to life becomes increasingly mechanical. The aim of social efforts is to produce things, and, in the process of idolatry of things we transform ourselves into commodities. The question here is not whether they are treated nicely and are well fed (things, too, can be treated nicely); the question is whether people are things or living beings. People love mechanical gadgets more than living beings. The approach to man is intellectual-abstract. One is **interested** in people as objects, in their common properties, in the statistical rules of mass behavior, not in living individuals. All this goes together with the increasing role of bureaucratic methods. In giant centers of production, giant cities, giant countries, [people] men are administered as if they were things; [people] men and their administrators are transformed into things, and they obey the law of things. In a bureaucratically organized and centralized industrialism, [people’s] men's tastes are manipulated so that they consume maximally and in predictable and profitable directions. Their intelligence and character become standardized by the ever-increasing use of tests, which select the mediocre and unadventurous over the original and daring. Indeed, the bureaucratic-industrial civilization that has been victorious in Europe and North America has created a new type of man. He has been described as the "organization man" and as homo consumens. He is in addition the homo mechanicus. By this I mean a "gadget man," deeply attracted to all that is mechanical and inclined against all that is alive. It is, of course, true that man's biological and physiological equipment provides him with such strong sexual impulses that even the homo mechanicus still has sexual desires and looks for women. But there is no doubt that the gadget man's interest in women is diminishing. A New Yorker cartoon pointed to this very amusingly: a sales girl trying to sell a certain brand of perfume to a young female customer recommends it by remarking, "It smells like a new sports car." Indeed, any observer of [people’s] men's behavior today will confirm that this cartoon is more than a clever joke. There are apparently a great number of [people] men who are more interested in sports-cars, television and radio sets, space travel, and any number of gadgets than they are in women, love, nature, food; who are more stimulated by the manipulation of non-organic, mechanical things than by life. Their attitude toward a woman is like that toward a car: you push the button and watch it race. It is not even too farfetched to assume that **homo mechanicus** has more pride in and is more fascinated by, devices that can **kill millions** of people across a distance of several thousands of miles within minutes than he is frightened and depressed by the possibility of such mass destruction. Homo mechanicus still likes sex {25} and drink. But all these pleasures are sought for in the frame of reference of the mechanical and the unalive. He expects that there must be a button which, if pushed, brings happiness, love, pleasure. (Many go to a psychoanalyst under the illusion that he can teach them to find the button.) The homo mechanicus becomes more and more interested in the manipulation of machines, rather than in the participation in and response to life. Hence he becomes indifferent to life, fascinated by the mechanical, and eventually attracted by death and total destruction. This affinity between the love of destruction and the love of the mechanical may well have been expressed for the first time in Marinetti's Futurist Manifesto (1909). "A roaring motor-car, which looks as though running on a shrapnel is more beautiful than the Victory of Samothrace. … We wish to glorify war--the only health-giver of the world-- militarism, patriotism, the destructive arm of the Anarchist, the beautiful Ideas that kill the contempt for woman." Briefly then, intellectualization, quantification, abstractification, bureaucratization, and reification--the very characteristics of modern industrial society--when applied to people rather than to things are not the principles of life but those of mechanics. People living in such a system must necessarily become indifferent to life, even **attracted** to **death**. They are not aware of this. They take the thrills of excitement for the joys of life and live under the illusion that they are very much alive when they only have many things to own and to use. The lack of protest against nuclear war and the discussion of our "atomologists" of the balance sheet of total or half-total destruction show how far we have already gone into the "**valley of the shadow of death.**"1 To speak of the necrophilous quality of our industrial civilization does not imply that industrial production as such is necessarily contrary to the principles of life. The question is whether the principles of social organization and of life are subordinated to those of mechanization, or whether the principles of life are the dominant ones. Obviously, the industrialized world has not found thus far an answer, to the question posed here: How is it possible to create a humanist industrialism as against the bureaucratic mass industrialism that rules our lives today? The danger of nuclear war is so grave that man may arrive at a new barbarism before he has even a chance to find the road to a humanist industrialism. Yet not all hope is lost; hence we might ask ourselves whether the hypothesis developed here could in any way contribute to finding peaceful solutions. I believe it might be useful in several ways. First of all, an awareness of our pathological situation, while not yet a cure, is nevertheless a **first step**. If more people **became aware** of the difference between love of life and love of death, if they became aware that they themselves are already far gone in the direction of indifference or of necrophilia, this shock alone could produce new and healthy reactions.

#### Death debating causes mass violence and genocide

Solomon 2k – Solomon, Psychology at Brooklyn College, Greenberg, Psych at the University of Arizona, & Pyszczynski, Psych at the University of Colorado, (Current Directions in Psychological Science 9.6, Sheldon, Jeff, and Tom, “Fear of Death and Social Behavior”)

Terror management theory posits that awareness of mortality engenders a potential for paralyzing terror, which is assuaged by cultural worldviews: humanly created, shared beliefs that provide individuals with the sense they are valuable members of an enduring, meaningful universe (self-esteem), and hence are qualified for safety and continuance beyond death. Thus, self-esteem serves the fundamental psychological function of buffering anxiety. In support of this view, studies have shown that bolstering selfesteem reduces anxiety and that reminders of mortality intensify striving for self-esteem; this research suggests that self-esteem is critical for psychological equanimity. Cultural worldviews serve the fundamental psychological function of providing the basis for death transcendence. To the extent this is true, reminders of mortality should stimulate bolstering of one’s worldview. More than 80 studies have supported this idea, most commonly by demonstrating that making death momentarily salient increases liking for people who support one’s worldview and hostility toward those with alternative worldviews. This work helps explain human beings’ dreadful history of intergroup prejudice and violence: The mere existence of people with different beliefs threatens our primary basis of psychological security; we therefore respond by derogation, assimilation efforts, or annihilation.

Why has history been plagued by a succession of appalling ethnic cleansings? Archaeologists have found bas-reliefs from 1100 B.C. depicting Assyrian invaders’ practice of killing indigenous people by sticking them alive on stakes from groin to shoulder. These xenophobic propensities reached their zenith in the 20th century, when Hitler’s Nazi regime perpetuated the most extensive effort at genocide in history, and have continued to resurface throughout the world in places such as Cambodia, Rwanda, Yugoslavia, and the United States— where in 1999 A.D. at Columbine High School in Littleton, Colorado, two Nazi-influenced teenagers massacred schoolmates, seemingly provoked by threats not to material well-being, but to the abstract entity known as self-esteem.

#### Turns the case---death culture produces detached fascination and reduces real tragedies to objects in a game---voting Aff is a hollow gesture that produces violence and makes enactment of the plan less likely---we have the only evidence specific to debate

Bjork 93 – Rebecca Bjork, Former College Debater and Former Associate Professor at the University of Utah, Where She Taught Graduate and Undergraduate Courses in Communication and Women in Debate, Reflections on the Ongoing Struggle, Debater's Research Guide 1992-1993: Wake Forest University, Symposium, http://groups.wfu.edu/debate/MiscSites/DRGArticles/Oudingetal1992Pollution.htm

#### While reflecting on my experiences as a woman in academic debate in preparation for this essay, I realized that I have been involved in debate for more than half of my life.  I debated for four years in high school, for four years in college, and I have been coaching intercollegiate debate for nine years.  Not surprisingly, much of my identity as an individual has been shaped by these experiences in debate.  I am a person who strongly believes that debate empowers people to be committed and involved individuals in the communities in which they live.  I am a person who thrives on the intellectual stimulation involved in teaching and traveling with the brightest students on my campus.  I am a person who looks forward to the opportunities for active engagement of ideas with debaters and coaches from around the country.  I am also, however, a college professor, a "feminist," and a peace activist who is increasingly frustrated and disturbed by some of the practices I see being perpetuated and rewarded in academic debate.  I find that I can no longer separate my involvement in debate from the rest of who I am as an individual. Northwestern I remember listening to a lecture a few years ago given by Tom Goodnight at the University summer debate camp.  Goodnight lamented what he saw as the debate community's participation in, and unthinking perpetuation of what he termed the **"death culture."**  He argued that the embracing of "big impact" arguments--**nuclear war**, **environmental destruction**, **genocide**, **famine**, and the like-by debaters and coaches signals a **morbid and detached fascination** with such events, one that views these real human tragedies as **part of a "game"** in which so-called "objective and neutral" advocates actively seek to find in their research the "impact to outweigh all other impacts"--the round-winning argument that will carry them to their goal of winning tournament X, Y, or Z. He concluded that our "use" of such events in this way is tantamount to a **celebration** of them; our detached, rational discussions **reinforce a detached, rational viewpoint**, when emotional and moral outrage may be a more appropriate response.  In the last few years, my academic research has led me to be persuaded by Goodnight's unspoken assumption; language is not merely some transparent tool used to transmit information, but rather is an incredibly powerful medium, the use of which inevitably **has real political and material consequences**. Given this assumption, I believe that it is important for us to examine the "discourse of debate practice:" that is, the language, discourses, and meanings that we, as a community of debaters and coaches, unthinkingly employ in academic debate.  If it is the case that the language we use has real implications for how we view the world, how we view others, and how we act in the world, then it is imperative that we critically examine our own discourse practices with an eye to how our language does violence to others.  I am shocked and surprised when I hear myself saying things like, "we killed them," or "take no prisoners," or "let's blow them out of the water."  I am tired of the "ideal" debater being defined as one who has mastered the art of verbal assault to the point where accusing opponents of lying, cheating, or being deliberately misleading is a sign of strength. But what I am most tired of is how women debaters are marginalized and rendered voiceless in such a discourse community.  Women who verbally assault their opponents are labeled "bitches" because it is not socially acceptable for women to be verbally aggressive.  Women who get angry and storm out of a room when a disappointing decision is rendered are labeled "hysterical" because, as we all know, women are more emotional then men.  I am tired of hearing comments like, "those 'girls' from school X aren't really interested in debate; they just want to meet men."  We can all point to examples (although only a few) of women who have succeeded at the top levels of debate.  But I find myself wondering how many more women gave up because they were tired of negotiating the mine field of discrimination, sexual harassment, and isolation they found in the debate community. As members of this community, however, we have great freedom to define it in whatever ways we see fit.  After all, what is debate except a collection of shared understandings and explicit or implicit rules for interaction?  What I am calling for is a critical examination of how we, as individual members of this community, characterize our activity, ourselves, and our interactions with others through language.  We must become aware of the ways in which our mostly hidden and unspoken assumptions about what "good" debate is function to exclude not only women, but ethnic minorities from the amazing intellectual opportunities that training in debate provides.  Our nation and indeed, our planet, faces incredibly difficult challenges in the years ahead.  I believe that it is not acceptable anymore for us to go along as we always have, assuming that things will straighten themselves out. If the rioting in Los Angeles taught us anything, it is that complacency breeds resentment and frustration.  **We may not be able to change the world**, but we **can change our own community**, and if we fail to do so, we give up the only real power that we have.

## Case

### China Miscalc

#### 1---No miscalc or escalation

James Pavur 19, DPhil Researcher at the Cybersecurity Centre for Doctoral Training at Oxford University, and Ivan Martinovic, Professor of Computer Science in the Department of Computer Science at Oxford University, “The Cyber-ASAT: On the Impact of Cyber Weapons in Outer Space”, 2019 11th International Conference on Cyber Conflict: Silent Battle, https://ccdcoe.org/uploads/2019/06/Art\_12\_The-Cyber-ASAT.pdf

A. Limited Accessibility

Space is difficult. Over 60 years have passed since the first Sputnik launch and only nine countries (ten including the EU) have orbital launch capabilities. Moreover, a launch programme alone does not guarantee the resources and precision required to operate a meaningful ASAT capability. Given this, one possible reason why space wars have not broken out is simply because only the US has ever had the ability to fight one [21, p. 402], [22, pp. 419–420].

Although launch technology may become cheaper and easier, it is unclear to what extent these advances will be distributed among presently non-spacefaring nations. Limited access to orbit necessarily reduces the scenarios which could plausibly escalate to ASAT usage. Only major conflicts between the handful of states with ‘space club’ membership could be considered possible flashpoints. Even then, the fragility of an attacker’s own space assets creates de-escalatory pressures due to the deterrent effect of retaliation. Since the earliest days of the space race, dominant powers have recognized this dynamic and demonstrated an inclination towards de-escalatory space strategies [23].

B. Attributable Norms

There also exists a long-standing normative framework favouring the peaceful use of space. The effectiveness of this regime, centred around the Outer Space Treaty (OST), is highly contentious and many have pointed out its serious legal and political shortcomings [24]–[26]. Nevertheless, this status quo framework has somehow supported over six decades of relative peace in orbit.

Over these six decades, norms have become deeply ingrained into the way states describe and perceive space weaponization. This de facto codification was dramatically demonstrated in 2005 when the US found itself on the short end of a 160-1 UN vote after opposing a non-binding resolution on space weaponization. Although states have occasionally pushed the boundaries of these norms, this has typically occurred through incremental legal re-interpretation rather than outright opposition [27]. Even the most notable incidents, such as the 2007-2008 US and Chinese ASAT demonstrations, were couched in rhetoric from both the norm violators and defenders, depicting space as a peaceful global commons [27, p. 56]. Altogether, this suggests that states perceive real costs to breaking this normative tradition and may even moderate their behaviours accordingly.

One further factor supporting this norms regime is the high degree of attributability surrounding ASAT weapons. For kinetic ASAT technology, plausible deniability and stealth are essentially impossible. The literally explosive act of launching a rocket cannot evade detection and, if used offensively, retaliation. This imposes high diplomatic costs on ASAT usage and testing, particularly during peacetime.

C. Environmental Interdependence

A third stabilizing force relates to the orbital debris consequences of ASATs. China’s 2007 ASAT demonstration was the largest debris-generating event in history, as the targeted satellite dissipated into thousands of dangerous debris particles [28, p. 4]. Since debris particles are indiscriminate and unpredictable, they often threaten the attacker’s own space assets [22, p. 420]. This is compounded by Kessler syndrome, a phenomenon whereby orbital debris ‘breeds’ as large pieces of debris collide and disintegrate. As space debris remains in orbit for hundreds of years, the cascade effect of an ASAT attack can constrain the attacker’s long-term use of space [29, pp. 295– 296]. Any state with kinetic ASAT capabilities will likely also operate satellites of its own, and they are necessarily exposed to this collateral damage threat. Space debris thus acts as a strong strategic deterrent to ASAT usage.

#### 2---Hotlines solve

Chen Lan 15, Writer on the Chinese Space Program, Go Taikounauts, http://www.go-taikonauts.com/images/newsletters\_PDF/GoTaikonauts18.pdf

Though Sino-U.S. cooperation on human spaceflight is still uncertain, a positive move between the two countries has been made, that is the establishment of a space hotline. Western media reported in November that the hotline has been setup between Washington and Beijing to allow easy sharing of technical information about their space operations, hopefully avoiding any misunderstandings or accidents.

#### 3---Zenko doesn’t say miscalc – just says “international crisis” --- countries will communicate – Lan 15 postdates and cites new studies

#### 4---No US-China war – nor accidental escalation

Timothy Heath 17, senior international defense research analyst at the nonprofit, nonpartisan RAND Corporation and member of the Pardee RAND Graduate School faculty, and William R. Thompson, Distinguished and Rogers Professor at Indiana University and an adjunct researcher at RAND, "U.S.-China Tensions Are Unlikely to Lead to War", National Interest, https://nationalinterest.org/feature/us-china-tensions-are-unlikely-lead-war-20411?page=0%2C1

Graham Allison's April 12 article, “ How America and China Could Stumble to War ,” explores how misperceptions and bureaucratic dysfunction could accelerate a militarized crisis involving the United States and China into an unwanted war. However, the article fails to persuade because it neglects the key political and geostrategic conditions that make war plausible in the first place. Without those conditions in place, the risk that a crisis could accidentally escalate into war becomes far lower. The U.S.-China relationship today may be trending towards greater tension, but the relative stability and overall low level of hostility make the prospect of an accidental escalation to war extremely unlikely. In a series of scenarios centered around the South China Sea, Taiwan and the East China Sea, Allison explored how well-established flashpoints involving China and the United States and its allies could spiral into unwanted war. Allison’s article argues that given the context of strategic rivalry between a rising power and a status-quo power, organizational and bureaucratic misjudgments increase the likelihood of unintended escalation. According to Allison, “the underlying stress created by China’s disruptive rise creates conditions in which accidental, otherwise inconsequential events could trigger a large-scale conflict.” This argument appears persuasive on its surface, in no small part because it evokes insights from some of Allison’s groundbreaking work on the organizational pathologies that made the Cuban Missile Crisis so dangerous. However, Allison ultimately fails to persuade because he fails to specify the political and strategic conditions that make war plausible in the first place. Allison’s analysis implies that the United States and China are in a situation analogous to that of the Soviet Union and the United States in the early 1960s. In the Cold War example, the two countries faced each other on a near-war footing and engaged in a bitter geostrategic and ideological struggle for supremacy. The two countries experienced a series of militarized crises and fought each other repeatedly through proxy wars. It was this broader context that made issues of misjudgment so dangerous in a crisis. By contrast, the U.S.-China relationship today operates at a much lower level of hostility and threat. China and the United States may be experiencing an increase in tensions, but the two countries remain far from the bitter, acrimonious rivalry that defined the U.S.-Soviet relationship in the early 1960s. Neither Washington nor Beijing regards the other as its principal enemy. Today’s rivals may view each other warily as competitors and threats on some issues, but they also view each other as important trade partners and partners on some shared concerns, such as North Korea, as the recent summit between President Donald Trump and Chinese president Xi Jinping illustrated. The behavior of their respective militaries underscores the relatively restrained rivalry. The military competition between China and the United States may be growing, but it operates at a far lower level of intensity than the relentless arms racing that typified the U.S.-Soviet standoff. And unlike their Cold War counterparts, U.S. and Chinese militaries are not postured to fight each other in major wars. Moreover, polls show that the people of the two countries regard each other with mixed views —a considerable contrast from the hostile sentiment expressed by the U.S. and Soviet publics for each other. Lacking both preparations for major war and a constituency for conflict, leaders and bureaucracies in both countries have less incentive to misjudge crisis situations in favor of unwarranted escalation. To the contrary, political leaders and bureaucracies currently face a strong incentive to find ways of defusing crises in a manner that avoids unwanted escalation. This inclination manifested itself in the EP-3 airplane collision off Hainan Island in 2001, and in subsequent incidents involving U.S. and Chinese ships and aircraft, such as the harassment of the USNS Impeccable in 2009. This does not mean that there is no risk, however. Indeed, the potential for a dangerous militarized crisis may be growing. Moreover, key political and geostrategic developments could shift the incentives for leaders in favor of more escalatory options in a crisis and thereby make Allison’s scenarios more plausible. Past precedents offer some insight into the types of developments that would most likely propel the U.S.-China relationship into a hostile, competitive one featuring an elevated risk of conflict. The most important driver, as Allison recognizes, would be a growing parity between China and the United States as economic, technological and geostrategic leaders of the international system. The United States and China feature an increasing parity in the size of their economies, but the United States retains a considerable lead in virtually every other dimension of national power. The current U.S.-China rivalry is a regional one centered on the Asia-Pacific region, but it retains the considerable potential of escalating into a global, systemic competition down the road. A second important driver would be the mobilization of public opinion behind the view that the other country is a primary source of threat, thereby providing a stronger constituency for escalatory policies. A related development would be the formal designation by leaders in both capitals of the other country as a primary hostile threat and likely foe. These developments would most likely be fueled by a growing array of intractable disputes, and further accelerated by a serious militarized crisis. The cumulative effect would be the exacerbation of an antagonistic competitive rivalry, repeated and volatile militarized crisis, and heightened risk that any flashpoint could escalate rapidly to war—a relationship that would resemble the U.S.-Soviet relationship in the early 1960s. Yet even if the relationship evolved towards a more hostile form of rivalry, unique features of the contemporary world suggest lessons drawn from the past may have limited applicability. Economic interdependence in the twenty-first century is much different and far more complex than in it was in the past. So is the lethality of weaponry available to the major powers. In the sixteenth century, armies fought with pikes, swords and primitive guns. In the twenty-first century, it is possible to eliminate all life on the planet in a full-bore nuclear exchange. These features likely affect the willingness of leaders to escalate in a crisis in a manner far differently than in past rivalries. More broadly, Allison’s analysis about the “Thucydides Trap” may be criticized for exaggerating the risks of war. In his claims to identify a high propensity for war between “rising” and “ruling” countries, he fails to clarify those terms, and does not distinguish the more dangerous from the less volatile types of rivalries. Contests for supremacy over land regions, for example, have historically proven the most conflict-prone, while competition for supremacy over maritime regions has, by contrast, tended to be less lethal. Rivalries also wax and wane over time, with varying levels of risks of war. A more careful review of rivalries and their variety, duration and patterns of interaction suggests that although most wars involve rivalries, many rivals avoid going to war. Misperceptions and strategic accidents remain a persistent feature of international politics, and it may well be that that mistakes are more likely to be lethal in periods of adjustment in relative power configurations. Rising states do have problems negotiating status quo changes with states that have staked out their predominance earlier. Even so, the probability of war between China and the United States is almost certainly far less than the 75 percent predicted by Allison. If the leaders of both countries can continue to find ways to dampen the trends towards hostile rivalry and maintain sufficient cooperation to manage differences, then there is good reason to hope that the risk of war can be lowered further still.

#### 4---But debris is good—

#### Loss of satellites shuts down drones

Daniel Ventre 11, Engineer for CNRS and Researcher for CESDIP, Cyberwar and Information Warfare, p. 198-199

The introduction of cyberspace operations is part of a specific context; a major evolution in the operation environment and the nature of the conflicts, which make irregular wars the rule, and make regular actors the exception to the rule. But the battle against unconventional, non-state governed, irregular actors raises specific problems: there are multiple actors, unpredictable at that, who do not abide by the same rules. New orders in conflicts are imposing the implementation of an ever more important need for information, and information collection and processing. Networks now have an incredible importance. The document refers to the growing threats against American heritage: the USA is a target and the increasing amount of attacks against their networks is indeed the proof of this. There are many obstacles which need to be removed before they can achieve real superiority and freedom to act, especially as vulnerable points may originate within the very operations of the armed forces. An example of this is the vulnerability of using products (software and hardware), commercial products (off-the-shelf), and sometimes even foreign products123. This brings to mind the fact that the US Air Force uses commercial, even foreign, applications for its cyberspace operations.

Information space extends to space124, particularly via communication and observation satellites125. Satellites are the keystone to the cyberspace and communication systems, but also the security system: monitoring (Echelon network is the symbol), observation, communication. These are at the heart of the C4ISR systems, without which a concept such as network-centric warfare could not exist. There would be no drones without satellites. It is even a question of extending the Internet to extra-atmospheric space. Projects in this vein (Interplanetary Networks) were being formed in the 1990s, but ran into several technical difficulties (delays in important transmissions due to high distances and costs) [GEL 06]. NASA dedicates a few pages on its website to this project126. The development of communication systems based on the infrastructures in extra-atmospheric space will also raise questions for legal, geopolitical and geostrategic domains: questions of seizing this space, questions of regulation of human activity in this space, of sovereignty, new territoriality and independence.

#### Drone prolif is inevitable and causes global nuclear war

Dr. Michael C. Horowitz 19, Professor of Political Science at University of Pennsylvania, NDT Champion from Emory University, PhD in Government from Harvard University, Adjunct Senior Fellow at the Center for a New American Security, “When Speed Kills: Autonomous Weapon Systems, Deterrence, and Stability”, 5/2/2019, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3348356

Thus, the reason to deploy autonomous systems would have to be their reliability and effectiveness rather than signaling. And giving up human control to algorithms in a crisis that could end with global nuclear war would require an extremely high level of perceived reliability and effectiveness. Few things are more important to militaries in crisis situations than informational awareness and control over decisions, and there might be fear that autonomous systems are prone to accidents.

This counterfactual illustrates that the development and deployment of lethal autonomous weapon systems by national militaries, if it occurs, is unlikely to have simple, easy, and linear consequences. Instead, human factors, including the psychological desire for control and organizational politics, will strongly shape how militaries think about developing and using LAWS. This will not just influence the potential for arms races in peacetime, but deterrence and wartime stability due to the organizational processes militaries implement for the deployment and use of autonomous systems on the battlefield.

This paper draws on research in strategic studies and examples from military history to assess how LAWS could influence the development and deployment of military systems, including arms races, crisis stability, and wartime stability, especially the risk of escalation. It also discusses the potential for arms control. It focuses on these questions through the lens of key characteristics of LAWS, especially the potential for increased operational speed and, simultaneously, less human control over battlefield choices. One of the primary attractions of autonomous systems, even compared to remotely piloted systems, is the potential to operate at machine speed. Another potential benefit is the possibility of machine-like accuracy in following programming, but that comes with a potential downside: the loss of control and the accompanying risk of accidents, adversarial spoofing, and miscalculation. Even if LAWS malfunction at the same rate as humans in a given scenario, the ability of operators to control the impact of those malfunctions may be lower, which could make LAWS less predictable on the battlefield. The paper then examines how these issues interact with the large uncertainty parameter associated with AI-based military capabilities at present, both in terms of the range of the possible and the opacity of their programming.

The results highlight several critical issues surrounding the development and deployment of LAWS.1 First, the desire to fight at machine speed with autonomous systems, while making a military more effective in a conflict, could increase crisis instability. As countries fear losing conflicts faster, it will generate escalation pressure, including an increased incentive for first strikes. Second, in addition to the actual risk of accidents and miscalculation from LAWS, the fear of accidents and losing control of autonomous systems could limit the willingness of militaries to deploy them, particularly since many militaries are conservative when it comes to emerging technologies and have high standards for system reliability. Third, the dual-use, or even general purpose, character of the basic science underlying many autonomous systems will make the technology hard to control, giving many countries and actors access to basic algorithms, though whether this is described as diffusion, proliferation, or an arms race will depend on political dynamics as much as anything.

Finally, multiple uncertainty parameters concerning lethal autonomous weapon systems could exacerbate security dilemmas. Uncertainty over the range of the possible concerning the programming of lethal autonomous weapon systems will increase fear of those systems in the near term, making restraint less likely for competitive reasons. Moreover, the inherent differences between remotely piloted systems and LAWS at the platform level come from software, not hardware. There is arguably an inherent opacity to lethal autonomous weapon systems. If an arms race over lethal autonomous weapon systems occurs, it will likely be because of worse-case assumptions about capability development by potential adversaries.

What is Autonomy or Artificial Intelligence?

Artificial intelligence is the use of computing power, in the form of algorithms, to conduct tasks that previously required human intelligence.2 Artificial intelligence in this context is best thought of as an umbrella technology or enabler, like the combustion engine or electricity. Military applications of artificial intelligence are potentially broad – from image recognition for surveillance to more efficient logistics to battle management.3 These include both non-kinetic applications, including in the cyber realm, as well as kinetic applications.4 One potential application of artificial intelligence is through armed autonomous systems that could be deployed on the battlefield, or what are most popularly called lethal autonomous weapon systems or lethal autonomous weapon systems. This differs from remotely-piloted systems where a human, though at a distance, still operates a given vehicle or system.

What is a lethal autonomous weapon system? While simple to describe on first glance, and easy to understand in the extreme – an armed humanoid robot with extremely broad programming making decisions about engaging in warfare – drawing the line between a lethal autonomous weapon system and other weapon systems is complex. In Directive 3000.09, published in 2012, the US Department of Defense defines an autonomous weapon as “A weapon system that, once activated, can select and engage targets without further intervention by a human operator.”5 What it means to select and engage a target is not entirely clear, however. For example, homing munitions, which have existed since World War II, select and engage targets, according to a common sense understanding of the terms.6

Exactly what functions are autonomous also matters. A system could have automatic piloting, for example, that flies or drives a platform to a target, but still have complete human control over the use of the weapon. That would be a system with a high level of automation, though not a lethal autonomous weapon system according to most perspectives. Heather Roff measures the level of autonomy in a weapon system based on three subcomponents: self-mobility, self-direction, and self-determination. This helps distinguish systems where there might be autonomy concerning the best way a missile should get to a target, but the target itself is designated by a person fromsystems where an algorithm might be making higher-level engagement decisions.7 There are already some applications of limited machine autonomy in military systems, with the most prominent example being the automatic mode present on many Close-In Weapon Systems (CIWS), such as the Phalanx, used to defend ships and incoming missiles from attack.8

This article will not resolve the definitional debate surrounding lethal autonomous weapon systems, which is still ongoing in meetings of the Group of Governmental Experts focused on lethal autonomous weapon systems in the United Nations Convention on Certain Conventional Weapons. Provisionally, this article adopts the Scharre and Horowitz definition that a lethal autonomous weapon system is “[A] weapon system that, once activated, is intended to select and engage targets where a human has not decided those specific targets are to be engaged.”9 However, moving beyond the close cases (e.g. particular types of missile guidance systems) and considering those weapon systems that clearly use machine intelligence to search for, select, and/or engage targets can help clarify what is at stake in this debate in the first place.10 After all, if most militaries most of the time would not have any need for lethal autonomous weapon systems, or those systems have significant disadvantages relative to remotely-piloted military robotics or soldiers on the battlefield, the stakes are lower. In contrast, if the integration of machine intelligence with military systems could give countries or violent non-state actors a significant advantage in how they employ force, it becomes even more crucial to engage the topic.

It is important to note that this article does not address concerns about existential risk related to artificial general intelligence – the fear that a superintelligence could decide to destroy the human race, either because it decides humans are malign or because humans program it to achieve a goal it can only accomplish by destroying humans.11 The existential risk issue associated with artificial intelligence is not necessarily closely coupled to military applications of artificial intelligence. If a super-intelligent machine learning system has the ability to take over human society in the interest of a goal – any goal – whether autonomous systems at much smaller orders of magnitude already exist in military systems will likely be unimportant. The super-intelligent system would simply create what it needed.

Why Invest in Autonomous Systems?

Militaries are already increasing their investments in remotely-piloted robotic systems. From UAVs such as the MQ-9 Reaper (United States) to uninhabited surface vehicles (USVs) such as the Guardium (Israel) to uninhabited ground vehicles (UGV) such as Platform-M (Russia), militaries around the world are investing in remotely piloted platforms, some of which can carry weapons. In these systems, human control over the use of force is not fundamentally different from the use of force with inhabited systems. In some cases, such as the MQ-9 Reaper, the sensor system a drone pilot uses to launch a weapon might even be the same sensor system a pilot in the cockpit of an inhabited fighter uses. Using remotely piloted systems gives militaries the ability to reduce the risk to their own soldiers while still projecting power in similar ways to how they used force previously.12 The first places militaries are likely to use kinetic lethal autonomous weapon systems include relatively “clear” environments such as air-to-air combat or naval combat, especially in geographic arenas where civilians are extremely unlikely to be present.13

#### Drolif means every hotspot goes nuclear.

Zenko and Kreps, PhDs, 14 \*Micah - Douglas Dillon fellow in the Center for Preventive Action at the Council on Foreign Relations, PhD in political science from Brandeis University; \*Sarah - Stanton nuclear security fellow at the Council on Foreign Relations, assistant professor in the department of government and an adjunct professor at Cornell Law School, BA from Harvard University, MSc from Oxford University, and PhD from Georgetown University; “Limiting Armed Drone Proliferation," Council on Foreign Relations, June 2014, http://aspheramedia.com/wp-content/uploads/2014/12/Limiting\_Armed\_Drone\_Proliferation\_CSR69.pdf

The inherent advantages of drones will not alone make traditional interstate warfare more likely—such conflicts are relatively rare anyway, with only one active interstate conflict in both 2012 and 2013.20 Nor will the probable type, quantity, range, and lethality of armed drones that states possess in coming decades make a government more likely to attempt to defeat an opposing army, capture or control foreign territory, or remove a foreign leader from power. However, misperceptions over the use of armed drones increase the likelihood of militarized disputes with U.S. allies, as well as U.S. military forces, which could lead to an escalating crisis and deeper U.S. involvement. Though surveillance drones can be used to provide greater stability between countries by monitoring ceasefires or disputed borders, armed drones will have destabilizing consequences. Arming a drone, whether by design or by simply putting a crude payload on an unarmed drone, makes it a weapon, and thereby a direct national security threat for any state whose border it breaches. Increased Frequency of Interstate and Intrastate Force For the United States, drones have significantly reduced the political, diplomatic, and military risks and costs associated with the use of military force, which has led to a vast expansion of lethal operations that would not have been attempted with other weapons platforms. Aside from airstrikes in traditional conflicts such as Libya, Iraq, and Afghanistan—where one-quarter of all International Security Assistance Force (ISAF) airstrikes in 2012 were conducted by drones—the United States has conducted hundreds in non-battlefield settings: Pakistan (approximately 369), Yemen (approximately 87), Somalia (an estimated 16), and the Philippines (at least 1, in 2006).21 Of the estimated 473 non-battlefield targeted killings undertaken by the United States since November 2002, approximately 98 percent were carried out by drones. Moreover, despite maintaining a “strong preference” for capturing over killing suspected terrorists since September 2011, there have been only 3 known capture attempts, compared with 194 drone strikes that have killed an estimated 1,014 people, 86 of whom were civilians.22 Senior U.S. civilian and military officials, whose careers span the pre– and post–armed drone era, overwhelmingly agree that the threshold for the authorization of force by civilian officials has been significantly reduced. Former secretary of defense Robert Gates asserted in October 2013, for example, that armed drones allow decision-makers to see war as a “bloodless, painless, and odorless” affair, with technology detaching leaders from the “inevitably tragic, inefficient, and uncertain” consequences of war.23 President Barack Obama admitted in May 2013 that the United States has come to see armed drones “as a cure-all for terrorism,” because they are low risk and instrumental in “shielding the government” from criticisms “that a troop deployment invites.”24 Such admissions from leaders of a democratic country with a system of checks and balances point to the temptations that leaders with fewer institutional checks will face. President Obama and his senior aides have stated that the United States is setting precedents with drones that other states may emulate.25 If U.S. experience and Obama’s cautionary words are any guide, states that acquire armed drones will be more willing to threaten or use force in ways they might not otherwise, within both interstate and intrastate contexts. States might undertake cross-border, interstate actions less discriminately, especially in areas prone to tension. As is apparent in the East and South China Seas, nationalist sentiments and the discovery of untapped, valuable national resources can make disputes between countries more likely. In such contested areas, drones will enable governments to undertake strike missions or probe the responses of an adversary—actions they would be less inclined to take with manned platforms. According to the Central Intelligence Agency (CIA), there are approximately 430 bilateral maritime boundaries, most of which are not defined by formal agreements between the affected states.26 Beyond the cases of East Asia, other cross-border flashpoints for conflict where the low-risk proposition of drone strikes would be tempting include Russia in Georgia or Ukraine, Turkey in Syria, Sudan within its borders, and China on its western periphery. In 2013, a Chinese counternarcotics official revealed that his bureau had considered attempting to kill a drug kingpin named Naw Kham, who was hiding in a remote region in northeastern Myanmar, by using a drone carrying twenty kilograms of dynamite. “The plan was rejected, because the order was to catch him alive,” the official recalled.27 With armed drones, China might make the same calculation that the United States has made—that killing is more straightforward than capturing—in choosing to target ostensibly high-threat individuals with drone strikes. China’s demonstrated willingness to employ armed drones against terrorists or criminals outside its borders could directly threaten U.S. allies in the region, particularly if the criterion China uses to define a terrorist does not align with that of the United States or its allies. Domestically, governments may use armed drones to target their perceived internal enemies. Most emerging drone powers have experienced recent domestic unrest. Turkey, Russia, Pakistan, and China all have separatist or significant opposition movements (e.g., Kurds, Chechens, the Taliban, Tibetans, and Uighurs) that presented political and military challenges to their rule in recent history. These states already designate individuals from these groups as “terrorists,” and reserve the right to use force against them. States possessing the lower risk—compared with other weapons platforms—capability of armed drones could use them more frequently in the service of domestic pacification, especially against time-sensitive targets that reside in mountainous, jungle, or other inhospitable terrain. Compared with typical methods used by military and police forces to counter insurgencies, criminals, or terrorists—such as ground troops and manned aircraft— unmanned drones provide significantly greater real-time intelligence through their persistent loiter time and responsiveness to striking an identified target. Increased Risk of Misperception and Escalation Pushing limits in already unstable regions is complicated by questions raised regarding rules of engagement: how would states respond to an armed drone in what they contend is their sovereign airspace, and how would opposing sides respond to counter-drone tactics? Japanese defense officials claim that shooting down Chinese drones in what Japan contends is its airspace is more likely to occur than downing manned aircraft because drones are not as responsive to radio or pilot warnings, thereby raising the possibility of an escalatory response.28 Alternatively, Japan might misidentify a Chinese manned fighter as an advanced drone and fire on it, especially if the aircraft’s radar signature is not sufficiently distinctive or if combat drones routinely fly over the disputed area. Thus, the additional risks associated with drone strikes, combined with the lack of clarity on how two countries would react to an attempted downing of a drone, create the potential for miscalculation and subsequent escalation. As U.S. Air Force commanders in South Korea noted, a North Korean drone equipped with chemical agents would not have to kill many or even any people on the peninsula to terrorize the population and escalate tensions.29 This scenario points to the spiraling escalatory dynamic that could be repeated—likely intensified in the context of armed drones—in other tension-prone areas, such as the Middle East, South Asia, and Central and East Africa, where the mix of low-risk and ambiguous rules of engagement is a recipe for escalation. Not all of these contingencies directly affect U.S. interests, but they would affect treaty allies whose security the United States has an interest in maintaining. Compared with other weapons platforms, current practice repeatedly demonstrates that drones make militarized disputes more likely due to a decreased threshold for the use of force and an increased risk of miscalculation. Increased Risk of Lethality The proliferation of armed drones will increase the likelihood of destabilizing or devastating one-off, high-consequence attacks. In March 2013, Senator Dianne Feinstein (D-CA) observed of drones: “In some respects it’s a perfect assassination weapon. . . . Now we have a problem. There are all these nations that want to buy these armed drones. I’m strongly opposed to that.”30 The worst-case contingency for the use of armed drones, albeit an unlikely circumstance, would be to deliver weapons of mass destruction. Drones are, in many ways, the perfect vehicle for delivering biological and chemical agents.31 A WMD attack, or even the assassination of a political leader, another troubling though unlikely circumstance, would have tremendous consequences for regional and international stability. Deterring such drone-based attacks will depend on the ability of the United States and other governments to accurately detect and attribute them. Technical experts and intelligence analysts disagree about the extent to which this will be possible, but the difficulties lie in the challenges of detecting drones (they emit small radar, thermal, and electron signatures, and can fly low), determining who controlled it (they can be programmed to fly to a preset GPS coordinate), or assigning ownership to a downed system (they can be composed of commercial, off-the-shelf components).32 It is equally noteworthy that civilian officials or military commanders have almost always used armed drones in ways beyond their initially intended applications. Drones do not simply fulfill existing mission requirements; they create new and unforeseen ones, and will continue to do so in the future. Furthermore, U.S. officials would be misguided to view future uses of armed drones solely through the prism of how the United States has used them—for discrete military operations in relatively benign air-defense environments. The potential for misperception is compounded by the fact that few governments seeking or acquiring armed drones have publicly articulated any strategy for how they will likely use them. Conversely, the uncertainty about how other countries will use drones provides the United States with an opportunity to shape drone doctrines, especially for U.S. allies interested in procuring drones from U.S. manufacturers.

#### Satellite loss shuts down global fracking

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Energy, environment, farming, mining, land use. All of these areas and more are now inextricably linked to satellite data and would be devastated should that flow of data stop. Environmental Monitoring Oh how complacent we've become. We take for granted that we will have instant images from space showing a volcanic eruption somewhere in the South Pacific within hours of learning that it happened. When the BP oll spill happened in the Gulf of Mexico in 2010, satellite images were used in conjunction with aircraft and ships to monitor the extent and evolving nature of the spill (Figures 10.1 and 10.2). The data were also used to direct the ships that were attempting to clean up the spill, to warn fishermen of areas in which it would be dangerous to fish, and to generally monitor the extent of the disaster. This is the type of data we get from space in a field known as remote sensing. Remote sensing is, well, exactly what its name implies. With it, you gather data, or sense, usually in the form of electromagnetic radiation (light), remotely - that is, you are not physically touching what you are looking at. Satellite remote sensing began shortly after we began launching satellites and many industries are now totally dependent upon having the capability. We use satellites, like the venerable Landsat series, to study the Earth m unprecedented detail. Since 1972, Landsat satellites have taken millions of high resolution images of the Earth's surface, allowing comprehensive studies of how the land has changed due to human intervention (deforestation, agriculture, settlement, etc.) and natural processes (desertification, floods, etc.). The best way to understand how useful Landsat and similar data can be to governments at all levels is best illustrated by looking at 14then and now" photographs. For example, Africa's Lake Chad has been shrinking for 40 years, as the desert has encroached on this once plentiful inland freshwater lake. Forty years ago, there were about 15,000 square miles of water within the lake. Now, it is less than 500 square miles (Figure 10.3) [1]. And what is the practical side of this particular bit of information? Governments use this type of satellite imagery to avoid human tragedy. Hundreds of thousands of people, if not millions, depend upon the waters of Lake Chad for agriculture, industry, and personal hygiene. With the lake going dry, how has this impacted on their livelihoods, their families, and their very lives? The European Space Agency (ESA) is freely providing satellite data to developing countries as they search for new sources of drinking water. For example, ESA assessed data obtained from space over Nigeria to find over 90 new freshwater sources within that country. After ground teams visited the new sites, all were confirmed to contain fresh water. This was no accident. These were satellites with sensors developed for just such purposes in mind [2]. Desertification is but one example of changing climates affecting people's everyday lives. What about more direct observations of our impact on the planet? Figures 10.4 and 10.5 show the scarring of the Earth's surface as a result of surface mining in West Virginia. This is not a polemic against mining; rather, it is an observation that we can use satellite imagery to monitor such mining and be mindful of its impact on the environment. Other than taking pictures of surface features, like lakes and open pit mines, how are satellites monitoring the Earth's changing climate? In just about every way, by: monitoring global land, sea, and atmospheric temperatures; measuring yearly average rainfall amounts just about everywhere on the globe; measuring glaciation rates; measuring sea surface heights; and more. Remote sensing is more than taking pictures of the Earth in the visible part of the spectrum. We can learn a great deal from looking at part of the spectrum that our eyes cannot see - but our instruments can. Shown in Figure 10.6 is a composite image of the Earth's surface showing the average land-surface temperature at night. The data came from two NASA satellites, Terra and Aqua, as they orbit the Earth in a polar orbit. (This means that they circle the Earth from top to bottom, passing over both the North and South Poles with each complete orbit.) Terra's orbit is such that it passes from the north to the south across the equator in the morning; Aqua passes south to north over the equator in the afternoon. Taken together, they observe the Earth's surface in its entirety every two days. Data sets such as this exist for just about any day of the year and can show either night-time lows or daytime highs. By looking in different parts of the spectrum, like the infrared light discussed above, we can make observations as described in Table 10.1. Pollution Monitoring As emerging countries industrialize, they also become polluters. Many of these countries are not exactly forthright about releasing air-pollution details to the media, so much of our awareness of the rising pollution there is anecdotal - typically m the form of stories told by people who have visited these countries and seen the extreme pollution at first hand. This, by the way, is not exactly scientific. Using satellites, and not relying on either the governments in question or second-hand stories, we can accurately assess the pollution levels there and elsewhere. Using satellite images to measure the amount of light absorbed or blocked by fine particulates in the atmosphere, otherwise known as air pollution, you can determine not only what the airborne pollutant might be, but also its size. And, by looking at the overall light blockage, an accurate estimate of the amount of pollution in the air can also be made. Recent studies show that many of these countries are covered in a pollution cloud that countries in the developed world would deem extremely harmful. And how do we know this with scientific certainty? From satellite measurements. Energy Production The recent boom in the production of shale oil in the United States and elsewhere is due in large part to the identification and geolocation of promising geologic formations for test drilling and fracking. "Fracking" is a somewhat new term that comes from the phrase "hydraulic fracturing". In fracking, massive amounts of previously unusable reservoirs of oil and natural gas are released for capture, sale, and transport from deposits deep within the Earth - many located at least a mile below the surface. In the United States alone, there may be as much as 750 trillion cubic feet of natural gas within shale deposits releasable by fracking [3]. How do energy companies know where to look for these deposits? In large part, by analyzing satellite imagery. According to Science Daily (26 February 2009), a new map of the Earth's gravitational field based on satellite measurements makes it much less resource intensive to find new oil deposits. The map will be particularly useful as the ice melts in the oil-rich Arctic regions. The easy-to-find oilfields have already been found. To fuel the growing world economy, those harder-to-find deposits must be located and tapped - which is why satellite imagery is so important. Take away this and other satellite-dependent techniques of oil and gas exploration and the world economy will feel the impact through higher oil and natural gas prices.

#### Fracking makes extinction inevitable---try-or die to shut it off

Rev. Mac Legerton 18, Co-Founder and Executive Director of the Center for Community Action, Member of the Board of Directors of the NC Climate Solutions Coalition, Member of the Board of Directors of the Windcall Institute, “Will The U.S. Blaze A Trail To Mass Extinction?”, APPPL News, 1/15/2018, https://www.apppl.org/news/will-the-u-s-blaze-a-trail-to-mass-extinction/

As an elder, I now realize that there is even a greater threat to humanity and life on Earth than nuclear war—though, unlike a nuclear exchange, this threat is a slow-motion catastrophe. Can you guess what it is? Here’s a clue: it is something with which most people don’t have a personal relationship. Tragically, some persons remain in total denial of its validity, much less its present danger. And that’s the problem – that’s why this threat needs to be more seriously addressed on the local, state, national, and international level.

What is it? It’s the slow-motion but rapidly growing catastrophe of climate change. There’s now good news amidst this seemingly overwhelming challenge. But the answer may surprise you. Today we know what is the #1 preventable cause of climate change. It’s not coal, it’s not nuclear, and it’s not oil and gasoline. It’s actually the use of the very fuel that is touted as being cleaner, greener, and cheaper than all the rest. This fuel is called “Natural Gas”.

Let’s start with its name – “Natural Gas”. What is “natural gas”? There’s actually nothing “natural” about it when it is forcibly extracted from the ground through hydraulic fracturing, commonly known as “fracking”. When something is forcibly ruptured from deep within the earth with the use of toxic chemicals, the last name you would use for it is “natural”.

Fracking disrupts the geologic fault lines causing earthquakes, uses millions of gallons of fresh water that becomes permanently poisoned by unknown, cancer-producing chemicals added to it, creates air pollution during the drilling process, increases the risk of injury and explosions, raises major health risks to both people and place in close proximity to it, and changes the nature of both neighborhoods and landscapes. Fracking also leaves a massive carbon footprint of drilling wells as deep as 8,000 feet and then drilling horizontally over 10,000 feet; On top of all this, it leaks major amounts of gas into the environment.

So, what is this gas? It is 90-95% methane gas which is a hydrocarbon compound made up of one carbon atom and four hydrogen atoms (CH4). It releases carbon into the atmosphere and produces carbon dioxide (C02) just like coal does when it is burned. Methane is not its trace element–it is its undisputed compound of this fossil fuel product. If a compound is 90-95% of a product, it makes sense to call it by that name. Doesn’t it? Well, actually not if you want people to believe and think that it is something that it is not. It is un-natural methane gas produced under massive and highly toxic pressure and hazardous conditions.

Now that we know what this gas is, what does it do to the atmosphere and climate that is so dangerous? This hydrocarbon has properties that block the radiation of heat from Earth’s surface 100 times more effectively than CO2 (released from burning coal) during its first 10 years of release and 86 times more effectively in its first 20 years. Because of the climate emergency underway, the first 10 or 20 years matter most.

When utility companies and the larger fossil fuel companies state that they are committed to lowering carbon emissions, this just isn’t true. They are radically escalating the most dangerous and worst of all fossil fuels in relation to its impact on the climate. Now the industry wants to expand production of methane gas all over the world by calling it “the most environmentally friendly fossil fuel”and a “bridge fuel” that we can safely use until we transition to 100% renewable energy sources.

Why would a major business industry want to call its product by another name? Perhaps for the same reason that the tobacco industry did not like the term “coffin nails” or “cancer sticks” for cigarettes. Honestly, there’s a striking similarity between what are called cigarettes and natural gas. When both were produced and named, their harm was not fully known. Once the industries promoting them learned of their significant harm, they did everything they could to hide this knowledge from the public. They even hired scientists to deny their dangers. The tobacco industry was eventually sued, the truth was acknowledged, and billions of dollars were paid out in the tobacco settlement.

This same scenario that occurred with the tobacco industry needs to occur with methane gas and the fossil fuel industry. The major difference in these two scenarios is that that this fossil fuel product doesn’t just threaten the lives of individuals who voluntarily breathe it in – it threatens the lives of not only every human being, but also all life on the planet. The outcome of this scenario needs to be a moratorium and eventual end to all use of methane gas as an energy source. For the sake of all of us, our communities, and world, the sooner the better. This abomination is different. There is no time to waste.

### Radiation

#### 1--- Zaisev is form 2009 – Kessler has increased we are not dead ! denied

#### **2---Grossman just says people will get poisoning – that’s not the same thing as death**

#### 3---No impact---collisions have already happened, radioactive material will stay in space, and it’s higher than most objects in orbit

Rebecca Harrington 16, Senior News Editor who works across INSIDER and Business Insider, 3/10/16, “Dozens of dead nuclear reactors are floating in space, and they'll eventually hit the earth,” https://www.businessinsider.com/nuclear-powered-satellites-space-2016-3

Radioactive materials, like uranium-235, can power a tiny satellite for years. They're more reliable than batteries and provide more energy than solar panels.

But back then, space-faring nations weren't as concerned with radioactive waste. Nuclear disasters like Three Mile Island and Chernobyl hadn't happened yet, and now we're much more worried about radiation exposure.

That's why the last nuclear-powered satellite, launched by the Soviet Union, blasted into orbit in 1988.

More than 30 different nuclear-reactor-powered satellites still orbit the earth. The US launched only one while the USSR launched all the rest.

Those nuclear reactors are similar to the ones in nuclear power plants on the ground. Uranium-235 undergoes fission, where its nucleus splits, giving off energy. This energy can be converted into electricity to power satellite instruments, or your house.

America's uranium-fueled SNAP-10A entered into an orbit of 575 miles above the earth in 1965. It operated for 43 days before it stopped responding. It's now in a slow trajectory to hit the ground in about 3,000 years. By then, hopefully, its radioactive cargo will be mostly harmless.

But if any of these nuclear-reactor-powered satellites collide with another object in space, or suddenly crash to the ground, they could release radioactivity.

The Soviet Union had a few such mishaps since it launched all those nuclear satellites. In 1978, its spy satellite, Kosmos 954, crashed into the Northwest Territories, scattering radioactivity across almost 48,000 square miles. The USSR had to pay Canada $10 million for the damage.

And in 1995, NASA scientists found a cloud of liquid, radioactive sodium and potassium coolant in orbit. The space agency eventually figured out that it came from the Soviet satellite Kosmos 1900. Something else in space crashed into it, causing the nuclear reactor to leak. The cloud of radioactive fluids is still floating up there, and space agencies continue to monitor it.

The good news is that all of these dead nuclear-reactor-powered satellites are in orbits higher than 430 miles. There's barely any air molecules at that height to slow down the satellites, so it should take them hundreds or thousands of years to wind their way back to the earth — at which point much of their radioactive contents will have significantly decayed.

### Asteroids

#### 1---Fish says difficult – not impossible meaning there are still work arounds --- increased telescope lenses solves

#### 2---Drier says that finding them is hard in the squo – we only find 1/3 – which means double bind – either some visibility going down doesn’t do anything OR we will die from the 1/3 we cannot see

#### 3---if ur impact could happen tomorrow – uhh that means our prediction tech doesn’t work --- means mega cons don’t do anything --- also this card was written in 2004 so not tomorrow

**4---No asteroids impact**

Mike Wall 16 (Mike Wall has been writing for Space.com since 2010. His book about the search for alien life, “Out There,” was published on Nov. 13, 2018. Before becoming a science writer, Michael worked as a herpetologist and wildlife biologist. He has a Ph.D. in evolutionary biology from the University of Sydney, Australia, a bachelor’s degree from the University of Arizona, and a graduate certificate in science writing from the University of California, Santa Cruz, 8/2/16, accessed 10/14/21, “Is Earth Safe from Asteroid Bennu?”, https://www.scientificamerican.com/article/is-earth-safe-from-asteroid-bennu/)AGabay

But, mission officials stressed, that chance is **slim**, and the **space rock** is not nearly **big enough** to pose an **existential threat** to the **planet**, despite what some media reports claimed over the weekend. [Potentially Dangerous Asteroids (Images)] "We're not talking about an **asteroid** that could **destroy the Earth**," OSIRIS-REx principal investigator Dante Lauretta, of the Lunar and Planetary Laboratory at the University of Arizona, told Space.com. "We're not anywhere near that kind of **energy** for an **impact**." SAMPLING AN ASTEROID If all goes according to plan, the $800 million OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer) mission will lift off atop a United Launch Alliance Atlas V rocket from Florida's Cape Canaveral Air Force Station on Sept. 8. The spacecraft will spend two years chasing Bennu down, finally rendezvousing with the near-Earth asteroid in August 2018. OSIRIS-REx will then study the space rock from orbit for another two years before grabbing at least 2.1 ounces (60 grams) of surface material in July 2020. In 2023, this relatively hefty sample should make it back to Earth, where researchers in laboratories around the globe will analyze the material in a number of ways. The mission team is chiefly interested in learning the role that asteroids like Bennu — dark, primitive and apparently carbon-rich objects — may have played in helping life get a foothold on Earth, Lauretta said. "Did these kinds of bodies deliver organic material and water, in the form of hydrated minerals like clays, to the surface of our planet that created the habitability and the environments that may have led to the origin of life?" Lauretta said. "That's the prime mission," to investigate that question, he added. There are secondary objectives as well, including learning more about the valuable resources that Bennu-like asteroids may harbor, Lauretta said. And then there's the planetary-defense angle, which has gotten a lot of attention in the last few days. A POTENTIALLY HAZARDOUS ASTEROID Bennu is officially classified as a potentially dangerous asteroid. In fact, there's an 0.037 percent (or 1-in-2,700) chance that it will **strike Earth** in the last quarter of the 22nd century, NASA scientists have calculated. Specifically, that's the probability that, during an Earthy flyby in 2135, Bennu will hit a special orbit-altering "keyhole" that will send it on a collision course with the planet later in the century. OSIRIS-REx will help scientists refine those odds, by refining their understanding of Bennu's orbit. (That orbit, by the way, is already the best-known of any asteroid, Lauretta said; thanks to extensive observations since Bennu's 1999 discovery, astronomers have nailed the space rock's orbital radius down to within 20 feet, or 6 m.) "Our uncertainties will shrink, so that will allow us to recalculate the **impact probability**," Lauretta said. "We don't know which direction it'll go. It could go down, because we just eliminated a bunch of possible keyholes that Bennu may hit. Or it may go up, because in the area that's left we have a higher concentration of keyholes compared to the overall area of the uncertainty plane." OSIRIS-REx's work will also help researchers better understand the Yarkovsky effect, which describes how absorbed sunlight, when radiated away as heat, affects an object's trajectory. Such information will improve knowledge not only of where Bennu is headed, but where it came from, Lauretta said. But to focus on where it's headed—what if Bennu does hit one of those keyholes in 2135, and the space rock squares Earth up for an impact in 2185 or thereabouts? What should humanity expect? Such an impact would likely devastate the local area but fall short of wiping out **civilization** or **causing a mass extinction**, experts have said. Astronomers estimate that a space rock must be at least 0.6 miles (1 kilometer) wide to cause a global catastrophe. (For perspective: The asteroid thought to have wiped out the dinosaurs—or at least to have finished them off—was probably about 6 miles, or 10 km, across.) But an impact would not be **inevitable**, even if Bennu had Earth in its sights. Given a decade or so worth of **lead time**, researchers say, an incoming asteroid could potentially be **nudged off course** using fly-along "**gravity tractor**" **probes** and/or "**kinetic impactors**." And if time is not on humanity's side, there's always the **nuclear option**.

#### Risk is zero

Larry Getlen 19 (Larry Getlen has Bylines in NY Mag, TIME, Esquire, 6/11/19, accessed 12/19/21, “Humans are probably safe from a catastrophic asteroid strike — for now”, https://nypost.com/2019/06/11/humans-are-probably-safe-from-a-catastrophic-asteroid-strike-for-now/)AGabay

The good news, though, is that the **odds** of such an object **hitting Earth** in our lifetimes is close to **zero**. The Torino Scale considers the size of NEOs and the chances of them hitting Earth over the next hundred years to place the possible danger on a scale from 1 to 10. At present, the upcoming century looks **danger-free.** “There’s currently no known **object** with a Torino rating even as **high** as **1**,” May writes. “Everything we know about is either **too small** to cause any damage, or there’s **zero chance** it will collide with Earth in the next hundred years.”

### Ozone

#### 1---Not about starlink – Delbert cites 5,000 normal sats within the LEO

#### 2---alt causes --- we lost onzone at higher rates before clean air act

#### 3---Voosen is talking about a period 359 millions years ago – obvi doesn’t apply

#### 4---Montreal protocol solves- ozone layer improving

Milman 16 (Oliver, environment reporter for the Guardian, citing research published in Science, “Ozone layer hole appears to be healing, scientists say” 6/30/2016, https://www.theguardian.com/environment/2016/jun/30/ozone-layer-hole-appears-to-be-healing-scientists-say)

The vast hole in the ozone layer above Antarctica appears to be healing, scientists say, putting the world on track to eventually remedy one of the biggest environmental concerns of the 1980s and 90s. Research by US and UK scientists shows that the size of the ozone void has shrunk, on average, by around 4m sq km since 2000. The measurements were taken from the month of September in each year, when the ozone hole starts to open up each year. The study, published in Science, states that the phase-out of chlorofluorocarbon (CFC) chemicals means that the ozone layer is “expected to recover in response, albeit very slowly.” CFCs, once commonly found in aerosols and refrigeration, can linger in the atmosphere for more than 50 years, meaning that the ozone hole will not be considered healed until 2050 or 2060. The Montreal protocol, a 1987 international treaty ratified by all UN members, successfully spurred nations to eradicate the use of CFCs in products. The agreement followed fears that ozone depletion could cause serious health and environmental harm through the ultraviolet light that would reach the surface of the Earth through the ozone barrier. The UN estimates that2m cases of skin cancer a year have been avoided through the phase-out of CFCs. The ozone hole opened up over the Antarctic due to the vast amounts of cloud that forms over the coldest continent on Earth. This cloud helps the CFC chemicals linger, causing the ozone layer to be eaten away. The void is at its greatest during the southern hemisphere’s spring. Volcanic activity can also spur greater ozone depletion. Last year, scientists discovered to their alarm that the largest ever ozone hole, measuring more than 20m sq km, had opened up in October. This is thought to be a blip, however, caused by volcanic activity in Chile. When scientists looked at data from September, compared to the same month over the past decade, they found a consistent shrinkage, with the opening up of the ozone hole occurring later each year. “When volcanoes team up with man-made chlorine, it’s a toxic mix and Antarctica is particularly vulnerable,” said study co-author Susan Solomon, of the Massachusetts Institute of Technology. “But when we looked at September we saw it was getting smaller. It was pretty cool to see it closing. The chemicals will slowly decay over time.” The extreme cold of Antarctica is thought to create a “feedback” effect that amplifies ozone depletion, by creating clouds that cause more ozone to be eaten up. The extra ultraviolet light is believed to have caused changes to plankton, but the sparse wildlife in Antarctica, such as penguins, have not been severely affected by the ozone hole. “If you had to have an ozone hole anywhere in the world, it would be Antarctica because it’s not teeming with life,” said Solomon. “It was the canary in the coalmine that showed us that if we didn’t back off with these chemicals, we’d have a crisis. “Britain, for example, has around 5% less ozone than it did 30 years ago but it would’ve been twice as bad as that if we didn’t phase out CFCs. There would be problems with skin cancer, eye damage and damage to crops. We made a decision to avert a problem and we ought to congratulate ourselves on that.” Solomon said she was hopeful the successful eradication of harmful CFCs would be followed by strong international action to avert the worst consequences of climate change. “Obviously the economics of global warming are different because the fossil fuel industry is worth a lot more in dollars than the companies making these chemicals,” she said. “But there are important parallels. It was amazing to see how quickly innovation solved the problem with CFCs so we got rid of them yet still have hair spray and air conditioning. We’re starting to see the same thing with global warming. We should look at the ozone problem and realize that nations can get together and come up with solutions.”

#### 5---Ozone depletion is all hype- every impact scenario disproven

Ridley 14 (Matt, PhD in zoology @ Oxford, environmental writer, “Serial hyperbole does the environmental movement no favours,” 9/25/14, http://www.rationaloptimist.com/blog/the-ozone-hole-was-exaggerated-as-a-problem/)

How much damage did the ozone hole ever threaten to do anyway? It is fascinating to go back and read what the usual hyperventilating eco-exaggerators said about ozone thinning in the 1980s. As a result of the extra ultraviolet light coming through the Antarctic ozone hole, southernmost parts of Patagonia and New Zealand see about 12 per cent more UV light than expected. This means that the weak September sunshine, though it feels much the same, has the power to cause sunburn more like that of latitudes a few hundred miles north. Hardly Armageddon. The New York Times reported “an increase in Twilight Zone-type reports of sheep and rabbits with cataracts” in southern Chile. Not to be outdone, Al Gore wrote that “hunters now report finding blind rabbits; fisherman catch blind salmon”. Zoologists briefly blamed the near extinction of many amphibian species on thin ozone. Melanoma in people was also said to be on the rise as a result. This was nonsense. Frogs were dying out because of a fungal disease spread from Africa — nothing to do with ozone. Rabbits and fish blinded by a little extra sunlight proved to be as mythical as unicorns. An eye disease in Chilean sheep was happening outside the ozone-depleted zone and was caused by an infection called pinkeye — nothing to do with UV light. And melanoma incidence in people actually levelled out during the period when the ozone got thinner. Then remember that the ozone hole appears when the sky is dark all day, and over an uninhabited continent. Even if it persists into the Antarctic spring and spills north briefly, the hole allows 50 times less ultraviolet light through than would hit your skin at the equator at sea level (let alone at a high altitude) in the tropics. So it would be bonkers to worry about UV as you sailed round Cape Horn in spring, say, but not when you stopped at the Galapagos: the skin cancer risk is 50 times higher in the latter place. This kind of eco-exaggeration has been going on for 50 years. In the 1960s Rachel Carson said there was an epidemic of childhood cancer caused by DDT; it was not true — DDT had environmental effects but did not cause human cancers.