### 1NC --- OFF

#### **Scientifically outer space excludes celestial bodies**

Science Daily ND [ScienceDaily, "Outer space," https://www.sciencedaily.com/terms/outer\_space.htm]/ISEE

Outer space, also simply called space, refers to the relatively empty regions of the universe outside the atmospheres of celestial bodies. Outer space is used to distinguish it from airspace (and terrestrial locations). Contrary to popular understanding, outer space is not completely empty (i.e. a perfect vacuum) but contains a low density of particles, predominantly hydrogen gas, as well as electromagnetic radiation.

#### Violation: Asteroids are celestial bodies

Team Leverage Edu, 5-21-2021, "Celestial Bodies: Planets, Comets, Asteroids and More," Leverage Edu, https://leverageedu.com/blog/celestial-bodies/

Asteroids are celestial bodies in space that are thin, irregularly formed rocks made of metal or minerals that revolve around the sun. These are mostly located between Mars and Jupiter in a region known as the asteroid belt.

#### Limits --- Allowing celestial bodies creates an unpredictable research burden – the neg not only has to familiarize themselves with the privatization of outer space but also every planet ever – this kills limits on an already large topic

#### Precision --- scientific consensus goes neg

#### Voter for fairness and education

#### No rvi’s – the aff shouldn’t get to win just by being topical

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#### Private companies are the ones mining

Alex Gilbert, 4-26-2021, "Mining in Space Is Coming," Milken Institute Review, https://www.milkenreview.org/articles/mining-in-space-is-coming

While this may sound fantastical, some baby steps toward the goal have already been taken. Last year, NASA awarded contracts to four companies to extract small amounts of lunar regolith by 2024, effectively beginning the era of commercial space mining. Whether this proves to be the dawn of a gigantic adjunct to mining on earth — and more immediately, a key to unlocking cost-effective space travel — will turn on the answers to a host of questions ranging from what resources can be efficiently. As every fan of science fiction knows, the resources of the solar system appear virtually unlimited compared to those on Earth. There are whole other planets, dozens of moons, thousands of massive asteroids and millions of small ones that doubtless contain humungous quantities of materials that are scarce and very valuable (back on Earth). Visionaries including Jeff Bezos imagine heavy industry moving to space and Earth becoming a residential area. However, as entrepreneurs look to harness the riches beyond the atmosphere, access to space resources remains tangled in the realities of economics and governance.

#### Mining is key to space col – there is a trade off

Jayshree Pandya May 13, 2019. Contributor to AI and Big Data for Forbes. "The Race to Mine Space," Forbes, https://www.forbes.com/sites/cognitiveworld/2019/05/13/the-race-to-mine-space/#7f35f0591a70

Introduction As our planet contends with resource scarcity, a potential solution can be found by traversing the great unknown -- outer space. Metals, minerals, and energy sources have been found to exist in near-infinite quantities within our [solar system,](https://oilprice.com/Metals/Commodities/Mining-the-Infinite-Resources-of-Space.html) and political and commercial interest in space mining is [grow](https://www.space.com/41707-space-mining-usgs-resource-survey.html)ing as the concept is increasingly becoming realistic and achievable. In 2017, [a feasibility study](https://pubs.usgs.gov/of/2017/1041/ofr20171041.pdf) by Laszlo Kestay, a research geologist at the U.S. Geological Survey’s Astrogeology Science Center, found that the projected water and metal resources of near-Earth asteroids is “*immense when compared to current needs…[the projections] could sustain a million-fold increase in human activity in space for a million years.*” The U.S. Geological Survey is actively working on developing the methodology for space resource assessments, which would provide much-needed information to guide policy and investment decisions in the not-too-distant future. Key questions remain regarding the technology required to conduct space mining and the policies that will govern this new frontier. Acknowledging this emerging reality, [Risk Group](https://www.riskgroupllc.com/) initiated a much-needed discussion on Space Mining with Daniel Faber, a Pioneer of Space Technologies and Mining, on [Risk Roundup](https://itunes.apple.com/us/podcast/risk-roundup/id1041763748?mt=2). The Next Gold Rush Serious plans are being made for the mining of the moon and nearby asteroids using smart [autonomous robots](https://spectrum.ieee.org/automaton/robotics/military-robots/nasa-training-swarmie-robots-for-space-mining) and [humans](https://www.independent.co.uk/news/science/china-nasa-asteroid-space-agency-beijing-a7732306.html). At the top of the mining resource list is the exploration of water, which is a prerequisite for keeping a space colony alive; without water, there is no way to move forward with space exploration. In addition, water could also be broken down into hydrogen and oxygen to form rocket engine fuel. Blue Origin/Amazon CEO Jeff Bezos recently [announced](https://www.theatlantic.com/science/archive/2019/05/jeff-bezos-moon-nasa/589150/) plans to extract water from the moon, which would allow for greater access to hydrogen, carbon, silicon, metals, and other critical materials. Bezos’ announcement highlights the massive economic opportunity ahead of us -- what some are referring to as the [next gold rush](https://www.sciencefocus.com/space/space-mining-the-new-goldrush/). One NASA report estimates that the mineral wealth of the asteroids is in the [quadrillions](https://globalnews.ca/news/3175097/nasa-plans-mission-to-a-metal-rich-asteroid-worth-quadrillions/).

#### **Specifically we can colonize mars**

Deep Space Industries ND, "Why asteroid mining is integral to our plans for colonizing Mars," Futurism, https://futurism.com/why-asteroid-mining-is-integral-to-our-plans-for-colonizing-mars

Mars has garnered a lot of attention from companies like SpaceX that wish to put people on the red planet in the hopes of colonizing it. Expeditions to Mars have been delayed, but many — such as former astronaut Buzz Aldrin — still believe we’ll settle on the planet within the next two decades. In order to ensure we’re able to sustain life on Mars, however, we’ll need supplies. From water to precious metals like platinum, we’ll need these to prosper in whatever task we take on. Asteroid mining companies have begun to realize that. According to Motherboard, these companies are currently engaged in a race to see who can accomplish the task of mining asteroids first — with Deep Space Industries (DSI) and Planetary Resources leading the charge. Both companies are targeting Near-Earth Asteroids for their respective mining missions. DSI is focusing on water acquisition with its Prospector-1, while Planetary Resources is focusing on harvesting metals as well as water. “During the next decade, we will begin the harvest of space resources from asteroids,” said Deep Space CEO Daniel Faber. “We are changing the paradigm of business operations in space, from one where our customers carry everything with them, to one in which the supplies they need are waiting for them when they get there.” Mining nearby asteroids isn’t just beneficial to those living in space, but those of us here on Earth as well. Mining for metals has severely impacted the amount of them left at our disposal, and shifting to deep sea diving isn’t great for the environment. Asteroids could be exactly what’s needed to offset the damage done to the ocean floor and our remaining resources.

#### Space colonization solves extinction.

Konrad Szocik 17. \*Department of Philosophy and Cognitive Science, University of Information Technology and Management in Rzeszow, Poland. \*\*Tomasz Wójtowicz, Institute of Security and Civic Education, Pedagogical University in Cracow, Poland. \*\*\*Leszek Baran, Chair of Internal Security, University of Information Technology and Management in Rzeszow, Poland. "War or peace? The possible scenarios of colonising Mars". Space Policy, Vol. 42. November 2017. https://www.sciencedirect.com/science/article/pii/S0265964617300371

The main benefit that could be provided by colonisation of Mars would be an opportunity to save the life of humanity when it is life on Earth will be endangered. It seems that the greatest possible source of dangers is the humanity itself, but beside it, the another greatest danger is probably the asteroid impact. To provide survival of humanity, the easier and the less costly project, as Impey points out, can be an attempt to reduce threats on Earth, and taking more care for proper conditions for human survival on Earth [12]. If we treat the idea of Mars colonisation as an alternative for an opportunity of survival of humanity, the mentioned running out resources are only one of possible threats for maintaining life on Earth. If we take into account such possible threats, it is worth considering Mars as perhaps the unique solution for further survival of humanity. Among possible threats on Earth we can enumerate such of them like nuclear war, environmental catastrophes, incurable epidemic, asteroid impact, or uncontrolled development of artificial intelligence that could be deleterious for humanity [12]. Of course, the concept of the human outer space colony as a way to solve human life could be applied probably only to some small part of the entire humanity, for instance, for these ones who survived one of the mentioned catastrophes. Consequently, the current work on preparation of the manned mission to Mars can be treated as a work to provide the future further living of the human species whose further existence on Earth in the next several hundred or several thousand years can be really endangered.

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#### 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.

### 1NC --- OFF

#### Plan: The United States should

#### --- ban mining by private entities

#### --- establish or expand an international public trust obligation towards celestial protection

#### Counterplan solves global space sustainability.

**Babcock ’19** — Hope M. Babcock, Professor of Law, Georgetown University Law Center, B.A., Smith College, L.L.B., Yale University; (2019; “ARTICLE: THE PUBLIC TRUST DOCTRINE, OUTER SPACE, AND THE GLOBAL COMMONS: TIME TO CALL HOME ET”; University of Michigan Libraries, Nexis Uni; *Syracuse University Law Review*, Vol. 69; //LFS—JCM)

[\*259] The doctrine also appears to be infinitely malleable. Original uses of the doctrine were restricted to only that "aspect of the public domain below the low-water mark on the margin of the sea and the great lakes, the waters over those lands, and the waters within rivers and streams of any consequence," 520and covered only traditional uses of those lands, like fishing and navigation. 521 Over time, the scope and application of the doctrine broadened to protect more public resources and different uses. 522 Thus, the doctrine expanded to protect new trust resources, such as dry sand beaches, inland lakes, groundwater, dry riverbeds, and wildlife, 523and passive uses of those resources, like scientific study. 524The original link to navigable water and tidelands disappeared. 525 Supporters of the [\*260] doctrine successfully advocated that it be applied to "wildlife, parks, cemeteries, and even works of fine art," 526 while arguing more recently its application to the atmosphere. 527

A doctrine that imposes a perpetual duty on the sovereign to preserve trust resources, prevents their alienation for private benefit, assures public access to them, and can be invoked by anyone seems particularly useful as a management tool in outer space. 528The fact that public access to trust resources is so central to the doctrine makes it reflective, not contradictory, of international space law's bar against appropriation of outer space and of the principle of space being the "province of all mankind." 529 It avoids the problems of alienation and exclusion associated with any of the management approaches associated with some form of private property and requires neither the creation of a new administrative authority nor the presence of a close-knit group of like-minded people. 530 Members of the public, both rich and poor, can invoke and enforce the doctrine as easily as the sovereign. 531 It is cost effective to the extent that no separate apparatus is required to implement it, and the doctrine has shown itself to be highly adaptable and innovative as different needs arise. 532 It could also fill the gap in international law with respect to managing celestial property. Therefore, of all the management approaches studied here, the PTD seems the most suited to keep order in space until a regulatory regime is imposed.

However, the doctrine provides no incentives for development of trust resources; rather, it might be used to limit or curtail that development, making it an imperfect, perhaps even counter-productive solution by itself to the extent that such development might be [\*261] beneficial. 533Modifying the doctrine to allow limited use of private property management approaches, like tradable development claims, might buffer that effect - a form of overlapping hybridity between one type of property, a commons, and a management regime from another, private property, enabled by application of the PTD.

Conclusion

"Only a legal system that accommodates both the human need for resources and the necessary preservation of mankind's common heritage can fulfill these criteria."534 The future is now with regard to the development of outer space and its resources - it is no longer a question of whether humans will engage in these activities, but how soon they will. Technically advanced countries and private commercial enterprises are probing outer space and preparing for landing on an asteroid or the moon to extract their resources. 535Speculators are selling deeds to the moon's surface and preparing to exploit the tourism potential that space offers. 536 But, the legal framework for managing these initiatives is almost nonexistent. 537International treaties came into being before all this activity began in earnest and national laws that might apply are stunted by jurisdictional quandaries like the absence of national boundaries in outer space. 538Thus, there is an urgency to figure out how to control what happens in outer space before its resources are irreparably damaged or permanently monopolized by powerful countries and individuals.

In the absence of regulation, much of the current debate centers on what property regime should be applied in outer space. 539The assumption is that by only allowing private property rights in space, countries and commercial enterprises will undertake the risks and costs of space development. 540However, unless international space law changes, it may prevent this from happening. If it changes, strong management controls will be necessary to prevent destruction or over-consumption of celestial resources, as well as monopolization and competitive behavior by participants, which could lead to hostilities and inequities.

[\*262] This Article examines various private property regimes, including those of less than full fee ownership, to see if any would avoid the conflict with the international prohibition on appropriation of outer space and its resources. It concludes that none will because each retains the right to exclude and each is insensitive to the treaties' equity concerns. In contrast, considering outer space to be common is consistent with international space law in both respects.

Hypothesizing that private property in outer space may yet prevail, this Article investigates different private property management approaches, such as the right of first possession, lotteries, and tradable development rights, to see if any would be cost effective, easy to implement and equitable, and would also prevent over-consumption, monopolization or the slide into rivalrous behavior. The Article concludes that each comes up short in some respect. Social norms as a management tool for property held in common, although compliant with international law, are also not up to the task. Instead, although ancient, the PTD, with its malleability, easy and cost-effective implementation and enforcement, non-consumption principle, and consistency with the goals that animate international space treaties, seems best suited to the task of protecting the public's interests in the global commons that is outer space as it has done for centuries in Earth-bound commons.

But, as its principal terrestrial use has been to protect trust resources from development, the doctrine needs some modification to encourage development of celestial resources. Hence, this Article suggests that modifying the PTD to allow the application of private property management tools, like tradable development rights, will not only allow development, but also will assure that when it happens, it will not be just profitable for a few, but will also be sustainable and equitable.

### Mining

#### 1. No miscalc from satellite disruptions

Mazur 12 (Jonathan Mazur, Manager Engineering at Northrop Grumman, writing in Space & Defense, from the Eisenhower Center for Space and Defense Studies. Past U.S. Actions: Redlines in Space. Space & Defense, Volume 6, Number 1, Fall 2012. https://inss.ndu.edu/Portals/97/Space\_and\_Defense\_6\_1.pdf?ver=2018-09-06-135424-147)

U.S. Reactions To Foreign Disruption Of U.S. Capabilities

In the 1970s, it was suspected that a U.S. maritime communications satellite was turned off by the Soviets when it was outside of the range of U.S. tracking stations.25 There does not appear to be any documented U.S. reaction, and I suspect there was none. In the mid-1990s, satellite hackers in Brazil began hijacking U.S. military communication satellite signals to broadcast their own information, though it took until 2009 for Brazil to crack down on the illegal activity with the support of the DoD.26 In 1998, a U.S.-German satellite known as ROSAT was rendered useless after it turned suddenly toward the sun. NASA investigators later determined the accident was possibly linked to a cyber-intrusion by Russia.

The fallout? Though there was an ongoing criminal investigation as of 2008; NASA security officials have seemed determined to publicly minimize the seriousness of the threat.27 In 2003, a signal originating from Cuba—later determined to be coming from Iranian embassy property— was jamming a U.S. communications satellite that was transmitting Voice of America programming over Iran, which was publicly referred to as an “act of war” by a U.S. official. 28 Press reporting indicates the U.S. administration was [frozen]“paralyzed” about how to cope with the jamming that continued for at least a month, even after U.S. diplomatic protests to Cuba.29 In 2005, U.S. diplomats protested to the Libyan government after two international satellites were illegally jammed disrupting American diplomatic, military, and FBI communications.30 In 2006, press reporting indicates that China hit a U.S. spy satellite with a ground-based laser. This action was acknowledged by the then director of the NRO, though the DoD remained tight lipped about the incident.31

“We’re at a point where the technology’s out there, and the capability for people to do things to our satellites is there. I’m focused on it beyond any single event.” – Air Force Space Command Commander, General Chilton, 2006 32

In 2009, a U.S. commercial Iridium communications satellite—extensively used by the DoD—was accidently destroyed by a collision with a dead Russian satellite.33 The U.S. company, Iridium, was able to minimize any loss of service by implementing a network solution within a few days.34 As of early 2011, no legal action had been taken by the company either because it is not clear who was at fault or because it might be politically problematic for the United States, which is trying to enter into bi-lateral transparency and confidence-building measures (TCBM) with Russia regarding space activities.35 Since August of 2010, North Korea has been intermittently using GPS jamming equipment, which reportedly has been interfering with U.S. and South Korean military operations and civilian use south of the North Korean border.36 Reportedly, only South Korea and the United Nations International Telecommunications Union—at the request of South Korea—have issued letters to Pyongyang demanding the cessation of disruptive communications signals in South Korea.37

It appears that the only time the U.S. military has responded with force to a disruption in U.S. space capabilities was in 2003, a few days after the start of the Iraq war.38 According to U.S. officials, Iraq was using multiple GPS jammers—which supposedly did not affect military GPS functionality. However, the U.S. military bombed the jammers anyway after a diplomatic complaint to Russia.39 The use of military force against the GPS jamming threat was possibly because the United States was already intervening in Iraq, and the bombing probably would not have occurred if the United States was not at war.

#### 2. Kessler is inevitable

**Wild 15** (Jim Wild, Professor of Space Physics at Lancaster University, “With So Much Vested In Satellites, Solar Storms Could Bring Life To A Standstill,” July 30, 2015, https://theconversation.com/with-so-much-vested-in-satellites-solar-storms-could-bring-life-to-a-standstill-45204)

These can disrupt satellite operations by depositing electrical charge within the on-board electronics, triggering phantom commands or overloading and damaging sensitive components. The effects of space weather on the Earth’s upper atmosphere disrupts radio signals transmitted by navigation satellites, potentially introducing positioning errors or, in more severe cases, rendering them unusable.

These are not theoretical hazards: in recent decades, solar storms have caused outages for a number of satellites services – and a handful of satellites have been lost altogether. These were costly events – satellite operator losses have run into hundreds of millions of dollars. The wider social and economic impact was relatively limited, but even so it’s unclear how our growing amount of space infrastructure would fare against the more extreme space weather that we might face.

When Space Weather Becomes A Hurricane

The largest solar storm on record was the Carrington event in September 1859, named after the British astronomer who observed it. Of course there were no Victorian satellites to suffer the consequences, but the telegraph systems of the time were crippled as electrical currents induced in the copper wires interfered with signals, electrocuted operators and set telegraph paper alight. The geomagnetic storm it triggered was so intense that the northern lights, usually a polar phenomenon, were observed as far south as the Bahamas.

Statistical analysis of this and other severe solar storms suggests that we can expect an event of this magnitude once every few hundred years – it’s a question of “when” rather than “if”. A 2007 study estimated a Carrington event today would cause US$30 billion in losses for satellite operators and threaten vital infrastructure in space and here on the ground. It’s a risk taken sufficiently seriously that it appears on the UK National Risk Register and has led the government to draw up its preparedness programme.

#### 3. Space miscalc unlikely

Chen Lan 16, an independent analyst and founder of the 'Go Taikonauts!', “Chinese Space Quarterly Report”, January 2016, http://www.go-taikonauts.com/images/newsletters\_PDF/GoTaikonauts18.pdf

During the IAC 2015, China re-iterated the wish for international participation and cooperation in its space station project including extending the station by modules provided by international partners. Twitter messages posted by a European journalist from the Congress, that is still to be confirmed, however, showed a different view from ESA. ESA’s new Director General JohannDietrich Wörner said he had told China that the world does not need two space stations and will likely persuade China to drop its space station in favour of joining the ISS. On the other side, during the traditional “Heads of Space Agencies Panel” in IAC 2015, NASA Administrator Charles Bolden expressed his belief that the current exclusion of China from the ISS will not last forever. 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.** Russia’s space agency Roscosmos on 17 December signed a cooperation agreement with the China National Space Administration (CNSA). The document was signed at the 20th regular meeting of Russian and Chinese Heads of Government, during Russian Prime Minister Dmitry Medvedev’s three-day visit to Beijing. The two

sides agreed to promote the use of “GLONASS” and “Beidou” and their augmentations in their own countries and around the world, expanding the market of navigation services provided by these systems. The two space agencies signed another agreement on the same day on cooperation in the field of space electronics. It was reported earlier that the two countries were discussing a barter deal that Russia will import Chinese space electronic components and will export rocket engines, presumably the RD-180, to China. However, an official statement about the agreement did not mention the engine. Also on the same day, Russian state-owned nanotechnology company RUSNANO and the China Aerospace Science and Industry Corporation (CASIC) signed a strategic partnership agreement. CNSA also signed an agreement with the Netherlands on 26 October, and a memorandum of understanding with the UAE (United Arab Emirates) on 15 December, on exploration and peaceful use of outer space. A year after India signed its first space cooperation agreement with China, scientists from ISRO and the Chinese space agency have decided on six major areas of interest, including the hosting of payloads on each other’s satellites and inter-planetary missions. The other areas of interest are Earth observation, disaster management, space science and navigation, as the Times of India reported on 5 October. The Brazilian Ministry of Science, Technology and Innovation announced on 30 December that the sixth CBERS (China-Brazil Earth Resources Satellite) satellite, CBERS-4A, is scheduled to be launched into space in December 2018. The Planetary Science Institute signed a cooperation agreement with the Qian Xuesen Laboratory of Space Technology (Qian Xuesen Lab), CAST, on 15 December to advance their mutual interests in facilitating the open-ended expansion of the exploration of the solar system and to use the knowledge thus gained in supporting the expansion of human activity beyond the Earth. Both institutions also wish to advance their common interest in communicating to the public the knowledge and benefits gained through robotic and human exploration of the solar system.

#### 4. Deterrence and interdependence check

Kyle L. Evanoff 19, Research Associate for International Institutions and Global Governance at the Council on Foreign Relations, “Big Bangs, Red Herrings, and the Dilemmas of Space Security”, Council on Foreign Relations, 6/27/2019, https://www.cfr.org/blog/big-bangs-red-herrings-and-dilemmas-space-security

Analysts pointed to Mission Shakti as a vivid example of growing contestation in the outer space domain. Traditional U.S. dominance in space has eroded as a litany of foreign actors (collaborator and competitor alike) have increased their spacefaring prowess, including through the development and use of ASAT weapons and dual-use uncrewed orbiters capable of space rendezvous and proximity operations [PDF]. Pundits fear that such space technologies could alter the calculus of deterrence to inauspicious effect or, worse, become instruments in an adversary’s enactment of a “space Pearl Harbor.” These fears are valid in some senses, overblown and misleading in others. Developments in space pose significant challenges for strategic stability. Obsessive concern with the remote contingency of kinetic warfare in orbit, however, detracts from efforts to address more pressing space security issues and makes catastrophic outcomes more, not less, probable.

Missiles and Lasers and Viruses, Oh My

Recent years have witnessed burgeoning democratization in the outer space domain as plummeting costs—both for manufacturing satellites and placing them in orbit—and proliferating technologies have enabled new spacefaring actors to deploy assets in Earth orbit. The number of active satellites has ballooned to more than two thousand, and their integration into military operations and civil life has deepened in tandem. Recognition of the indispensability of these orbital assets to numerous areas of strategic competition, and defense planners’ emphasis on offensive capabilities as a deterrence measure, has led states to invest large sums in the development of ASAT weapons of various stripes.

In their April Space Threat Assessment 2019 [PDF] report, Todd Harrison, Kaitlyn Johnson, and Thomas G. Roberts of the Center for Strategic and International Studies outline four categories of counterspace operations: kinetic physical attacks, non-kinetic physical attacks, electronic attacks, and cyberattacks. This litany of potential threats, which vary in their severity, reversibility, ease of attribution, and other aspects, makes U.S. policymakers uneasy. After over half a century of spacefaring pre-eminence, the United States has come to depend on the remote-sensing, telecommunications, and positioning, navigation, and timing capabilities that satellites provide. The resounding defeat of the Iraqi military by American and coalition forces during the Gulf War of the early 1990s underscored the substantial battlefield advantages that orbital capabilities confer, and numerous subsequent conflicts have affirmed the U.S. military’s tactical and strategic reliance on space assets. Proliferating counterspace systems heighten the potential for adversaries to disrupt American command, control, and communications networks, as well as surveillance and reconnaissance operations. In attacking these critical space systems, U.S. adversaries could compromise large segments of the national defense enterprise.

Indeed, an insecure orbital environment poses significant challenges for broader strategic stability. Actors in possession of counterspace capabilities can threaten or attack vital elements of ballistic missile launch detection architectures and other systems integral to national and international security, which opens new avenues for intentional, inadvertent, or accidental dispute or conflict escalation. In this sense, novel satellite vulnerabilities add layers of technical and psychological complexity to already labyrinthine deterrence calculations. The effect compounds in light of the deep integration of satellites into information and communications networks: cyber intrusions into space systems are a tantalizing option for state and nonstate actors, and such operations carry their own elaborate deterrence considerations, not least the difficulty of attribution. The net result is a convoluted deterrence landscape, rife with uncertainty and in constant motion thanks to the rapid clip and often competitive character of technological innovation.

Swords of Many Edges

For staunch deterrence advocates, this uncertainty justifies expanding counterspace arsenals. In their view, preventing a space Pearl Harbor in which a U.S. adversary launches a crippling surprise attack against American orbital assets requires evincing the certainty of a devastating counterattack. One way of accomplishing this is through the unambiguous demonstration of effective counterspace capabilities. The clearer the demonstration, the better. In this sense, ASAT missile tests, which are easy to attribute and spectacular in nature, hold great allure as a means of signaling orbital strike capabilities.

Such tests, however, come with significant drawbacks. The most obvious of these is that they generate large amounts of dangerous space debris, which pose serious hazards to spacecraft. Each new fragment requires monitoring and, in cases of potential collisions, risk assessment and avoidance maneuvers. Debris-generating military operations, in this sense, are a self-defeating proposition. ASAT missile tests also come with nebulous reputational costs, as the corpus of international space law, including the 1967 Outer Space Treaty, emphasizes that uses of space should be peaceful in nature. Likewise, UN Debris Mitigation Guidelines [PDF] affirm the importance of minimizing space junk, a dictum inconsistent with kinetic weapons testing. Western media heaped scorn on India for its violation of the important, if incipient, norm against debris generation, even after the country took pains to destroy a low-altitude satellite in order to minimize the lifespan of the bulk of the fragments.

Another important consideration for would-be ASAT testers lies in the potential for space militarization to ignite or exacerbate international arms races. Although military activities have been a persistent feature of the Space Age, those activities have often furthered peaceful as much as warlike pursuits, as has been the case with many remote-sensing operations and the opening of the U.S. Global Positioning System to civilian use. Militarization is a process rather than a state of affairs, and one that takes various forms at that. Deterrence implications notwithstanding, the development and deployment of counterspace capabilities can drive potential adversaries to develop and deploy similar capabilities, contributing to the erosion of norms of peaceful use.

Some military planners and policymakers’ assertions to the contrary, space is at present less a domain of warfighting than a domain of deep interdependence. The value of combat support functions performed from space, as important as they are to battlefield success, pales in comparison to that of other satellite-facilitated services, which are vital to myriad aspects of contemporary global society. Common space security interests include minimizing debris-generation, coordinating on satellite placement and radio-frequency spectrum use, monitoring terrestrial and space weather and the global environment, ensuring the integrity of global navigation satellite systems, tracking licit and illicit ground, air, and maritime movements, scanning for hazardous comets and asteroids, and conducting scientific observations and experiments. Many of these require states to work together to maximize benefits and minimize risks. Perceptions that one or more countries are attempting in systematic fashion to exert dominance and preclude other actors’ access to the domain and its benefits, then, carry significant dangers. They bend state behavior toward aggression and actual warfighting.

Security in the Heavens and on Earth

National governments, including that of the United States, should be careful not to make active contributions to such perceptions. Although low-level grey zone aggression has become commonplace for space-linked systems due to the relative ease and reversibility of many cyber and electronic attacks, space remains free of kinetic combat at present, as a recent Secure World Foundation report [PDF] emphasizes. Rather than responding to limited attacks by expanding counterspace arsenals, which carries the risk of contributing to arms race dynamics, U.S. and allied policymakers should accept some amount of limited aggression as more or less inevitable. They should place more emphasis on diplomacy—not weaponry—as a tool in mitigating these sorts of attacks. The United States should work with other spacefaring powers to reach consensus on non-binding rules of the road for space, using the International Code of Conduct for Outer Space Activities [PDF] that the European Union proposed in 2008 as a rough starting point. While new international law could be a greater boon still, formal UN discussions on the Prevention of an Arms Race in Outer Space have yielded little progress since the mid-1980s. A joint Chinese-Russian proposal for a Treaty on the Prevention of the Placement of Weapons in Outer Space, for instance, has significant shortcomings and has drawn open condemnation from the United States. Such paralysis, in tandem with the Trump administration’s and U.S. Senate Republicans’ disdain of multilateral treaties, makes a formal agreement a farfetched proposition for now.

More important, U.S. policymakers should avoid making decisions on the basis of a possible, though highly improbable, space Pearl Harbor. They should recognize that latent counterspace capabilities—as exemplified in 2008’s Operation Burnt Frost, which saw the United States repurpose a ballistic missile interceptor to destroy a satellite—are more than sufficient to deter adversaries from launching a major surprise attack in almost all scenarios, especially in light of the aforementioned deep interdependence in the space domain. Adding to the deterrence effect are uncertain offensive cyber capabilities. The United States continues to launch incursions into geopolitical competitors’ critical systems, such as the Russian power grid, and has demonstrated a willingness to employ cyberattacks in the wake of offline incidents, as it did after Iran shot down a U.S. drone last week. Unlike in the nuclear arena, where anything short of the prospect of nuclear retaliation holds limited dissuasive power, space deterrence can stem from military capabilities in various domains. For this reason, an attack on a U.S. satellite could elicit any number of responses. The potential for cross-domain retaliation, combined with the high strategic value of space assets, means that any adversary risks extreme escalation in launching a major assault on American space architectures. Again, well-conceived diplomatic efforts are useful in averting such scenarios altogether.

#### 5. Collision is unlikely – all countries receive collision warnings THREE days ahead AND their evidence doesn’t assume new technology.

**Mosher** **’19** [Dave; September 3rd; Journalist with more than a decade of experience reporting and writing stories about space, science, and technology; Business Insider, “Satellite collisions may trigger a space-junk disaster that could end human access to orbit. Here’s How,” <https://www.usafa.edu/app/uploads/Space_and_Defense_2_3.pdf>; GR]

The Kessler syndrome plays center-stage in the movie "Gravity," in which an accidental space collision endangers a crew aboard a large space station. But Gossner said that type of a runaway space-junk catastrophe is unlikely. "Right now I don't think we're close to that," he said. "I'm not saying we couldn't get there, and I'm not saying we don't need to be smart and manage the problem. But I don't see it ever becoming, anytime soon, an unmanageable problem." There is no current system to remove old satellites or sweep up bits of debris in order to prevent a Kessler event. Instead, space debris is monitored from Earth, and new rules require satellites in low-Earth orbit be deorbited after 25 years so they don't wind up adding more space junk. "Our current plan is to manage the problem and not let it get that far," Gossner said. "I don't think that we're even close to needing to actively remove stuff. There's lots of research being done on that, and maybe some day that will happen, but I think that — at this point, and in my humble opinion — an unnecessary expense." A major part of the effort to prevent a Kessler event is the Space Surveillance Network (SSN). The project, led by the US military, uses 30 different systems around the world to identify, track, and share information about objects in space. Many objects are tracked day and night via a networkof radar observatories around the globe. Optical telescopes on the ground also keep an eye out, but they aren't always run by the government. "The commercial sector is actually putting up lots and lots of telescopes," Gossner said. The government pays for their debris-tracking services. Gossner said one major debris-tracking company is called Exoanalytic. It uses about 150 small telescopes set up around the globe to detect, track, and report space debris to the SSN. Telescopes in space track debris, too. Far less is known about them because they're likely top-secret military satellites. Objects detected by the government and companies get added to a catalog of space debris and checked against the orbits of other known bits of space junk. New orbits are calculated with supercomputers to see if there's a chance of any collisions. Diana McKissock, a flight lead with the US Air Force's 18th Space Control Squadron, helps track space debris for the SSN. She said the surveillance network issues warnings to NASA, satellite companies, and other groups with spacecraft, based on two levels of emergency: basic and advanced. The SSN issues a basic emergency report to the public three days ahead of a 1-in-10,000 chance of a collision. It then provides multiple updates per day until the risk of a collision passes. To qualify for such reporting, a rogue object must come within a certain distance of another object. In low-Earth orbit, that distance must be less than 1 kilometer (0.62 mile); farther out in deep space, where the precision of orbits is less reliable, the distance is less than 5 kilometers (3.1 miles). Advanced emergency reports help satellite providers see possible collisions much more than three days ahead. "In 2017, we provided data for 308,984 events, of which only 655 were emergency-reportable," McKissock told Business Insider in an email. Of those, 579 events were in low-Earth orbit (where it's relatively crowded with satellites).

#### 6. No ev that proves tradeoff – even if some sats go down – no warrant for why it trades off w warming adaption

#### 7. Their ev is just about data observations – no reason why data observations leads to adaptation

#### 8. Mining solves climate better – ruling it out solidifies earth based mining.

Roberts et al 18 [Siobhan Roberts (Roberts has won a number of Canadian National Magazine Awards,[2] and she is the winner of the Communications Award of the Joint Policy Board for Mathematics "for her engaging biographies of eminent mathematicians and articles about mathematics".She earned a degree in history at Queen's University, then a graduate degree in journalism from Ryerson University in 1997.) et al, 10-19-2018, "Asteroid mining might actually be better for the environment," MIT Technology Review, <https://www.technologyreview.com/2018/10/19/139664/asteroid-mining-might-actually-be-better-for-the-environment/> ]/ISEE

For a certain kind of investor, asteroid mining is a path to untold riches. Astronomers have long known that asteroids are rich in otherwise scarce resources such as platinum and water. So an obvious idea is to mine this stuff and return it to Earth—or, in the case of water, to a moon base or Earth-orbiting space station. There is no shortage of interest in these ventures. In the last decade, investors have funded half a dozen companies that have set their sights on various nearby rocks. To many observers, it’s only a matter of time before such a mission gets the green light. But profit margins are only part of the picture. A potentially more significant aspect of these missions is the impact they will have on Earth’s environment. But nobody has assessed this environmental impact in detail. Today, that changes thanks to the work of Andreas Hein and colleagues at the University of Paris-Saclay in France. These guys have calculated the greenhouse-gas emissions from asteroid-mining operations and compared them with the emissions from similar Earth-based activities. Their results provide some eyebrow-raising insights into the benefits that asteroid mining might provide. The calculations are relatively straightforward. Rocket launches release significant amounts of greenhouse gases into the atmosphere. The fuel on board the first stage of a rocket burns in Earth’s atmosphere to form carbon dioxide. For kerosene-burning rockets, one kilogram of fuel creates three kilograms of CO2. (The second and third stages operate outside the Earth’s atmosphere and so can be ignored.) Reentries are just as damaging. That’s because a significant mass of a re-entering vehicle ablates in the upper atmosphere, producing NOx such as nitrous oxide (N2O), a greenhouse gas that is about 300 times more potent than CO2. By one estimate, the space shuttle released about 20% of its mass in the form of N2O every time it returned to Earth. Hein and co use these numbers to calculate that a kilogram of platinum mined from an asteroid would release some 150 kilograms of CO2 into Earth’s atmosphere. However, economies of scale from large asteroid-mining operations could lower this to about 60 kilograms of CO2 per kilogram of platinum. That needs to be compared with the emission from Earth-based mining. Here, platinum mining generates significant greenhouse gases, mostly from the energy it takes to remove this stuff from the ground. Indeed, the numbers are huge. The mining industry estimates that producing one kilogram of platinum on Earth releases around 40,000 kilograms of carbon dioxide. “The global warming effect of Earth-based mining is several orders of magnitude larger,” say Hein and co. The figures for water are also encouraging. In this case, the authors calculate the greenhouse-gas emissions from an asteroid-mining operation that returns water to anywhere within the moon’s orbit, a so-called cis-lunar orbit. They compare this to the emissions from sending the same volume of water from Earth into orbit. The big difference is that a water-carrying vehicle from Earth can haul only a small percentage of its mass as water. But an asteroid-mining spacecraft can transport a significant multiple of its mass as water to cis-lunar orbit. “Substantial savings in greenhouse gas emissions can be achieved,” say Hein and co. This interesting work should help to focus minds on the environmental impacts of mining, which are rapidly increasing in profile. But it is only a first step. There is significant uncertainty in the numbers here, so these will need to be better understood. Other factors will also eventually need to be taken into account. The Earth-bound mining industry could become more environmentally friendly by using renewable energy rather than burning coal to generate power (as it does in South Africa). Rocket launching could also become greener if more eco-friendly fuels are developed. Both these things would change the numbers. There are also emissions that this analysis does not take into account. For example, it does not include the emissions from mission control on Earth or from launch-pad construction. Then there are the ongoing effects of rocket launches on the ozone layer, which also need to be considered. So there is more work to be done. But Hein and co have taken a significant first step toward realistic environmental life-cycle assessments for asteroid mining, a task that will surely become more pressing as this industry matures.

#### 9. Climate doesn’t cause extinction.

Dr. Amber Kerr et al. 19, Energy and Resources PhD at the University of California-Berkeley, known agroecologist, former coordinator of the USDA California Climate Hub; Dr. Daniel Swain, Climate Science PhD at UCLA, climate scientist, a research fellow at the National Center for Atmospheric Research; Dr. Andrew King, Earth Sciences PhD, Climate Extremes Research Fellow at the University of Melbourne; Dr. Peter Kalmus, Physics PhD at the University of Colombia, climate scientist at NASA’s Jet Propulsion Lab; Professor Richard Betts, Chair in Climate Impacts at the University of Exeter, a lead author on the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in Working Group 1; Dr. William Huiskamp, Paleoclimatology PhD at the Climate Change Research Center, climate scientist at the Potsdam Institute for Climate Impact Research; 6/4/2019, “Claim that human civilization could end in 30 years is speculative, not supported with evidence,” <https://climatefeedback.org/evaluation/iflscience-story-on-speculative-report-provides-little-scientific-context-james-felton/>, Stras

There is no scientific basis to suggest that climate breakdown will “annihilate intelligent life” (by which I assume the report authors mean human extinction) by 2050.

However, climate breakdown does pose a grave threat to civilization as we know it, and the potential for mass suffering on a scale perhaps never before encountered by humankind. This should be enough reason for action without any need for exaggeration or misrepresentation!

A “Hothouse Earth” scenario plays out that sees Earth’s temperatures doomed to rise by a further 1°C (1.8°F) even if we stopped emissions immediately.

Peter Kalmus, Data Scientist, Jet Propulsion Laboratory:

This word choice perhaps reveals a bias on the part of the author of the article. A temperature can’t be doomed. And while I certainly do not encourage false optimism, assuming that humanity is doomed is lazy and counterproductive.

Fifty-five percent of the global population are subject to more than 20 days a year of lethal heat conditions beyond that which humans can survive

Richard Betts, Professor, Met Office Hadley Centre & University of Exeter:

This is clearly from Mora et al (2017) although the report does not include a citation of the paper as the source of that statement. The way it is written here (and in the report) is misleading because it gives the impression that everyone dies in those conditions. That is not actually how Mora et al define “deadly heat”---they merely looked for heatwaves when somebody died (not everybody) and then used that as the definition of a “deadly” heatwave.

North America suffers extreme weather events including wildfires, drought, and heatwaves. Monsoons in China fail, the great rivers of Asia virtually dry up, and rainfall in central America falls by half.

Andrew King, Research fellow, University of Melbourne:

Projections of extreme events such as these are very difficult to make and vary greatly between different climate models.

Deadly heat conditions across West Africa persist for over 100 days a year

Peter Kalmus, Data Scientist, Jet Propulsion Laboratory:

The deadly heat projections (this, and the one from the previous paragraph) come from Mora et al (2017)1.

It should be clarified that “deadly heat” here means heat and humidity beyond a two-dimension threshold where at least one person in the region subject to that heat and humidity dies (i.e., not everyone instantly dies). That said, in my opinion, the projections in Mora et al are conservative and the methods of Mora et al are sound. I did not check the claims in this report against Mora et al but I have no reason to think they are in error.

1- Mora et al (2017) Global risk of deadly heat, Nature Climate Change

The knock-on consequences affect national security, as the scale of the challenges involved, such as pandemic disease outbreaks, are overwhelming. Armed conflicts over resources may become a reality, and have the potential to escalate into nuclear war. In the worst case scenario, a scale of destruction the authors say is beyond their capacity to model, there is a ‘high likelihood of human civilization coming to an end’.

Willem Huiskamp, Postdoctoral research fellow, Potsdam Institute for Climate Impact Research:

This is a highly questionable conclusion. The reference provided in the report is for the “Global Catastrophic Risks 2018” report from the “Global Challenges Foundation” and not peer-reviewed literature. (It is worth noting that this latter report also provides no peer-reviewed evidence to support this claim).

Furthermore, if it is apparently beyond our capability to model these impacts, how can they assign a ‘high likelihood’ to this outcome?

While it is true that warming of this magnitude would be catastrophic, making claims such as this without evidence serves only to undermine the trust the public will have in the science.

Daniel Swain, Researcher, UCLA, and Research Fellow, National Center for Atmospheric Research:

It seems that the eye-catching headline-level claims in the report stem almost entirely from these knock-on effects, which the authors themselves admit are “beyond their capacity to model.” Thus, from a scientific perspective, the purported “high likelihood of civilization coming to an end by 2050” is essentially personal speculation on the part of the report’s authors, rather than a clear conclusion drawn from rigorous assessment of the available evidence.

#### 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.”

#### 10.No space war and terrestrial conflict turns it

Luke Penn-Hall 15, Analyst at The Cipher Brief, M.A. from the Johns Hopkins School for Advanced International Studies, B.A. in International Relations and Religious Studies from Claremont McKenna College, “5 Reasons “Space War” Isn’t As Scary As It Sounds”, The Cipher Brief, 8/18/2015, https://www.thecipherbrief.com/article/5-reasons-%E2%80%9Cspace-war%E2%80%9D-isn%E2%80%99t-scary-it-sounds

The U.S. depends heavily on military and commercial satellites. If a less satellite-dependent opponent launched an anti-satellite (ASAT) attack, it would have far greater impact on the U.S. than the attacker. However, it’s not as simple as that – for the following reasons:

1. An ASAT attack would likely be part of a larger, terrestrial attack. An attack on space assets would be no different than an attack on territory or other assets on earth. This means that no space war would stay limited to space. An ASAT campaign would be part of a larger conventional military conflict that would play out on earth.

2. Every country with ASAT capabilities also needs satellites. While the United States is the most dependent on military satellites, most other countries need satellites to participate in the global economy. All countries that have the technical ability to play in this space – the U.S., Russia, China and India - also have a vested interest in preventing the militarization of space and protecting their own satellites. If any of those countries were to attack U.S. satellites, it would likely hurt them far more than it would hurt the United States.

3. Destruction of satellites could create a damaging chain reaction. Scientists warn that the violent destruction of satellites could result in an effect called an ablation cascade. High-velocity debris from a destroyed satellite could crash into other satellites and create more high-velocity debris. If an ablation cascade were to occur, it could render certain orbital levels completely unusable for centuries.

4. Any country that threatened access to space would threaten the global economy. Even if a full-blown ablation cascade didn’t occur, an ASAT campaign would cause debris, making operating in space more hazardous. The global economy relies on satellites and any disruption of operations would be met with worldwide disapproval and severe economic ramifications.

5. International Prohibits the Use of ASAT Weapons. Several international treaties expressly prohibit signatory nations from attacking other countries’ space assets. It is generally accepted that space should be treated as a global common area, rather than a military domain.

While it remains necessary for military planners to create contingency plans for a, space war it is a highly unlikely scenario. All involved parties are incentivized against attacking. However, if a space war did occur, it would be part of a larger conflict on Earth. Those concerned about the potential for war in space should be more concerned about the potential for war, period.

#### 11.Offensive capabilities are weak, there are lots of defenses---their ev is hype

Dr. Joan Johnson-Freese 16, Ph.D. in Political Science and International Relations from Kent State University, Chair of the Department of National Security Studies at the Naval War College, and Theresa Hitchens, Senior Research Scholar at the Center for International and Security Studies and Former Director of the United Nations Institute for Disarmament Research (UNIDIR), “Stop The Fearmongering Over War In Space: The Sky’s Not Falling, Part 1”, Breaking Defense, 12/27/2016, https://breakingdefense.com/2016/12/stop-the-fearmongering-over-war-in-space-the-skys-not-falling-part-1/

Star Wars it ain’t, but the Pentagon is increasingly anxious over threats to its satellites, as we’ve reported frequently in recent years. But in this op-ed, scholars Joan Johnson-Freese and Theresa Hitchens argue that war in space is dangerously overhyped. — the editors

In the last two years, we’ve seen rising hysteria over a future war in space. Fanning the flames are not only dire assessments from the US military, but also breathless coverage from a cooperative and credulous press. This reporting doesn’t only muddy public debate over whether we really need expensive systems. It could also become a self-fulfilling prophecy. The irony is that nothing makes the currently slim possibility of war in space more likely than fearmongering over the threat of war in space.

Two television programs in the past two years show how egregious this fearmongering can get. In April 2015, the CBS show 60 Minutes ran a segment called “The Battle Above.” In an interview with General John Hyten, the then-chief of U.S. Air Force Space Command, it came across loud and clear that the United States was being forced to prepare for a battle in space — specifically against China — that it really didn’t want.

Gen. John Hyten: It’s a competition that I wish wasn’t occurring, but it is. And if we’re threatened in space, we have the right of self-defense, and we’ll make sure we can execute that right.

David Martin: And use force if necessary.

Gen. John Hyten: That’s why we have a military. You know, I’m not NASA.

It was explained by Hyten and other guests that China is building a considerable amount of hardware and accumulating significant know-how regarding space, all threatening to space assets Americans depend on every day. If viewers weren’t frightened after watching the segment, it wasn’t for lack of trying on the part of CBS.

Using terms like “offensive counterspace” as a 1984 NewSpeak euphemism for “weapons,” it was made clear that the United States had no choice but to spend billions of dollars on offensive counterspace technology to not just thwart the Chinese threat, but control and dominate space. While it didn’t actually distort facts — just omit facts about current U.S. space capabilities — the segment was basically a cost-free commercial for the military-industrial complex.

In retrospect though, “The Battle Above” was pretty good compared to CNN’s recent special, War in Space: The Next Battlefield. The latter might as well have been called Sharknado in Space – because the only far-out weapons technology our potential adversaries don’t have, according to the broadcast, seems to be “sharks with frickin’ laser beams attached to their heads!”

First, CNN needs to hire some fact checkers. Saying “unlike its adversaries, the U.S. has not yet weaponized space” is deeply misleading, like saying “unlike his political opponents, President-Elect Donald Trump has not sprouted wings and flown away”: A few (admittedly alarming) weapons tests aside, no country in the world has yet weaponized space. Contrary to CNN, stock market transactions are not timed nor synchronized through GPS, but a closed system. Cruise missiles can find their targets even without GPS, because they have both GPS and precision inertial measurement units onboard, and IMUs don’t rely on satellite data. Oh, and the British rock group Pink Floyd holds the only claim to the Dark Side of the Moon: There is a “far side” of the Moon — the side always turned away from the Earth — but not a “dark side” — which would be a side always turned away from the Sun.

More nefariously, the segment sensationalized nuggets of truth within a barrage of half-truths, backed by a heavy bass, dramatic soundtrack (and gravelly-voiced reporter Jim Sciutto) and accompanied by sexy and scary visuals.

Make no mistake there are dangers in space, and the United States has the most to lose if space assets are lost. The question is how best to protect them. Here are a few facts CNN omitted.

The Reality

The U.S. has all of the technologies described on the CNN segment and deemed potentially offensive: maneuverable satellites, nano-satellites, lasers, jamming capabilities, robotic arms, ballistic missiles that can be used as anti-satellite weapons, etc. In fact, the United States is more technologically advanced than other countries in both military and commercial space.

That technological superiority scares other countries; just as the U.S. military space community is scared of other countries obtaining those technologies in the future. The U.S. military space budget is more than 10 times greater than that of all the countries in the world combined. That also causes other countries concern.

More unsettling still, the United States has long been leery of treaty-based efforts to constrain a potential arms race in outer space, as supported by nearly every other country in the world for decades. Indeed, under the administration of George W. Bush, the U.S. talking points centered on the mantra “there is no arms race in outer space,” so there is no need for diplomat instruments to constrain one. Now, a decade later, the U.S. military – backed by the Intelligence Community which operates the nation’s spy satellites – seems to be shouting to the rooftops that the United States is in danger of losing the space arms race already begun by its potential adversaries. The underlying assumption — a convenient one for advocates of more military spending — is that now there is nothing that diplomacy can do.

However, it must be remembered that most space-related technologies – with the exception of ballistic missiles and dedicated jammers – have both military and civil/commercial uses; both benign — indeed, helpful — and nefarious uses. For example, giving satellites the ability to maneuver on orbit can allow useful inspections of ailing satellites and possibly even repairs.

Further, the United States is not unable to protect its satellites, as repeated during the CNN broadcast by various interviewees and the host. Many U.S. government-owned satellites, including precious spy satellites, have capabilities to maneuver. Many are hardened against electro-magnetic pulse, sport “shutters” to protect optical “eyes” from solar flares and lasers, and use radio frequency hopping to resist jamming.

Offensive weapons, deployed on the ground to attack satellites, or in space, are not a silver bullet. To the contrary, U.S. deployment of such weapons may actually be detrimental to U.S. and international security in space (as we argued in a recent Atlantic Council publication, Towards a New National Security Space Strategy). Further, there are benefits to efforts started by the Obama Administration to find diplomatic tools to restrain and constrain dangerous military activities in space.

These diplomatic efforts, however, would be undercut by a full-out U.S. pursuit of “space dominance.” This includes dialogue with China, the lack of which Gen. William Shelton, retired commander of Air Force Space Command, lamented in the CNN report.

Given CNN’s “cast,” the spin was not surprising. Starting with Ghost Fleet author Peter Singer set the sensationalist tone, which never altered. The apocalyptic opening, inspired by Ghost Fleet, posited a scenario where all U.S. satellites are taken off-line in nearly one fell swoop. Unless we are talking about an alien invasion, that scenario is nigh on impossible. No potential adversary has such capabilities, nor will they ever likely do so. There is just too much redundancy in the system.

#### 12. Deterrence and interdependence check

Kyle L. Evanoff 19, Research Associate for International Institutions and Global Governance at the Council on Foreign Relations, “Big Bangs, Red Herrings, and the Dilemmas of Space Security”, Council on Foreign Relations, 6/27/2019, https://www.cfr.org/blog/big-bangs-red-herrings-and-dilemmas-space-security

Analysts pointed to Mission Shakti as a vivid example of growing contestation in the outer space domain. Traditional U.S. dominance in space has eroded as a litany of foreign actors (collaborator and competitor alike) have increased their spacefaring prowess, including through the development and use of ASAT weapons and dual-use uncrewed orbiters capable of space rendezvous and proximity operations [PDF]. Pundits fear that such space technologies could alter the calculus of deterrence to inauspicious effect or, worse, become instruments in an adversary’s enactment of a “space Pearl Harbor.” These fears are valid in some senses, overblown and misleading in others. Developments in space pose significant challenges for strategic stability. Obsessive concern with the remote contingency of kinetic warfare in orbit, however, detracts from efforts to address more pressing space security issues and makes catastrophic outcomes more, not less, probable.

Missiles and Lasers and Viruses, Oh My

Recent years have witnessed burgeoning democratization in the outer space domain as plummeting costs—both for manufacturing satellites and placing them in orbit—and proliferating technologies have enabled new spacefaring actors to deploy assets in Earth orbit. The number of active satellites has ballooned to more than two thousand, and their integration into military operations and civil life has deepened in tandem. Recognition of the indispensability of these orbital assets to numerous areas of strategic competition, and defense planners’ emphasis on offensive capabilities as a deterrence measure, has led states to invest large sums in the development of ASAT weapons of various stripes.

In their April Space Threat Assessment 2019 [PDF] report, Todd Harrison, Kaitlyn Johnson, and Thomas G. Roberts of the Center for Strategic and International Studies outline four categories of counterspace operations: kinetic physical attacks, non-kinetic physical attacks, electronic attacks, and cyberattacks. This litany of potential threats, which vary in their severity, reversibility, ease of attribution, and other aspects, makes U.S. policymakers uneasy. After over half a century of spacefaring pre-eminence, the United States has come to depend on the remote-sensing, telecommunications, and positioning, navigation, and timing capabilities that satellites provide. The resounding defeat of the Iraqi military by American and coalition forces during the Gulf War of the early 1990s underscored the substantial battlefield advantages that orbital capabilities confer, and numerous subsequent conflicts have affirmed the U.S. military’s tactical and strategic reliance on space assets. Proliferating counterspace systems heighten the potential for adversaries to disrupt American command, control, and communications networks, as well as surveillance and reconnaissance operations. In attacking these critical space systems, U.S. adversaries could compromise large segments of the national defense enterprise.

Indeed, an insecure orbital environment poses significant challenges for broader strategic stability. Actors in possession of counterspace capabilities can threaten or attack vital elements of ballistic missile launch detection architectures and other systems integral to national and international security, which opens new avenues for intentional, inadvertent, or accidental dispute or conflict escalation. In this sense, novel satellite vulnerabilities add layers of technical and psychological complexity to already labyrinthine deterrence calculations. The effect compounds in light of the deep integration of satellites into information and communications networks: cyber intrusions into space systems are a tantalizing option for state and nonstate actors, and such operations carry their own elaborate deterrence considerations, not least the difficulty of attribution. The net result is a convoluted deterrence landscape, rife with uncertainty and in constant motion thanks to the rapid clip and often competitive character of technological innovation.

Swords of Many Edges

For staunch deterrence advocates, this uncertainty justifies expanding counterspace arsenals. In their view, preventing a space Pearl Harbor in which a U.S. adversary launches a crippling surprise attack against American orbital assets requires evincing the certainty of a devastating counterattack. One way of accomplishing this is through the unambiguous demonstration of effective counterspace capabilities. The clearer the demonstration, the better. In this sense, ASAT missile tests, which are easy to attribute and spectacular in nature, hold great allure as a means of signaling orbital strike capabilities.

Such tests, however, come with significant drawbacks. The most obvious of these is that they generate large amounts of dangerous space debris, which pose serious hazards to spacecraft. Each new fragment requires monitoring and, in cases of potential collisions, risk assessment and avoidance maneuvers. Debris-generating military operations, in this sense, are a self-defeating proposition. ASAT missile tests also come with nebulous reputational costs, as the corpus of international space law, including the 1967 Outer Space Treaty, emphasizes that uses of space should be peaceful in nature. Likewise, UN Debris Mitigation Guidelines [PDF] affirm the importance of minimizing space junk, a dictum inconsistent with kinetic weapons testing. Western media heaped scorn on India for its violation of the important, if incipient, norm against debris generation, even after the country took pains to destroy a low-altitude satellite in order to minimize the lifespan of the bulk of the fragments.

Another important consideration for would-be ASAT testers lies in the potential for space militarization to ignite or exacerbate international arms races. Although military activities have been a persistent feature of the Space Age, those activities have often furthered peaceful as much as warlike pursuits, as has been the case with many remote-sensing operations and the opening of the U.S. Global Positioning System to civilian use. Militarization is a process rather than a state of affairs, and one that takes various forms at that. Deterrence implications notwithstanding, the development and deployment of counterspace capabilities can drive potential adversaries to develop and deploy similar capabilities, contributing to the erosion of norms of peaceful use.

Some military planners and policymakers’ assertions to the contrary, space is at present less a domain of warfighting than a domain of deep interdependence. The value of combat support functions performed from space, as important as they are to battlefield success, pales in comparison to that of other satellite-facilitated services, which are vital to myriad aspects of contemporary global society. Common space security interests include minimizing debris-generation, coordinating on satellite placement and radio-frequency spectrum use, monitoring terrestrial and space weather and the global environment, ensuring the integrity of global navigation satellite systems, tracking licit and illicit ground, air, and maritime movements, scanning for hazardous comets and asteroids, and conducting scientific observations and experiments. Many of these require states to work together to maximize benefits and minimize risks. Perceptions that one or more countries are attempting in systematic fashion to exert dominance and preclude other actors’ access to the domain and its benefits, then, carry significant dangers. They bend state behavior toward aggression and actual warfighting.

Security in the Heavens and on Earth

National governments, including that of the United States, should be careful not to make active contributions to such perceptions. Although low-level grey zone aggression has become commonplace for space-linked systems due to the relative ease and reversibility of many cyber and electronic attacks, space remains free of kinetic combat at present, as a recent Secure World Foundation report [PDF] emphasizes. Rather than responding to limited attacks by expanding counterspace arsenals, which carries the risk of contributing to arms race dynamics, U.S. and allied policymakers should accept some amount of limited aggression as more or less inevitable. They should place more emphasis on diplomacy—not weaponry—as a tool in mitigating these sorts of attacks. The United States should work with other spacefaring powers to reach consensus on non-binding rules of the road for space, using the International Code of Conduct for Outer Space Activities [PDF] that the European Union proposed in 2008 as a rough starting point. While new international law could be a greater boon still, formal UN discussions on the Prevention of an Arms Race in Outer Space have yielded little progress since the mid-1980s. A joint Chinese-Russian proposal for a Treaty on the Prevention of the Placement of Weapons in Outer Space, for instance, has significant shortcomings and has drawn open condemnation from the United States. Such paralysis, in tandem with the Trump administration’s and U.S. Senate Republicans’ disdain of multilateral treaties, makes a formal agreement a farfetched proposition for now.

More important, U.S. policymakers should avoid making decisions on the basis of a possible, though highly improbable, space Pearl Harbor. They should recognize that latent counterspace capabilities—as exemplified in 2008’s Operation Burnt Frost, which saw the United States repurpose a ballistic missile interceptor to destroy a satellite—are more than sufficient to deter adversaries from launching a major surprise attack in almost all scenarios, especially in light of the aforementioned deep interdependence in the space domain. Adding to the deterrence effect are uncertain offensive cyber capabilities. The United States continues to launch incursions into geopolitical competitors’ critical systems, such as the Russian power grid, and has demonstrated a willingness to employ cyberattacks in the wake of offline incidents, as it did after Iran shot down a U.S. drone last week. Unlike in the nuclear arena, where anything short of the prospect of nuclear retaliation holds limited dissuasive power, space deterrence can stem from military capabilities in various domains. For this reason, an attack on a U.S. satellite could elicit any number of responses. The potential for cross-domain retaliation, combined with the high strategic value of space assets, means that any adversary risks extreme escalation in launching a major assault on American space architectures. Again, well-conceived diplomatic efforts are useful in averting such scenarios altogether.

### Deflection

#### 1. No warrant for why public entieties cant take over --- howe is talking about tech in general – not specific to private entetie The plan cant restrict planetary defense --- countries will just circumvert – a restriction isn’t a ban – which means that companies wont solve

#### 2. Space WMDs are successfully banned now

Kilibarda 16 [Pavle Kilibarda holds a LL.M. from the Geneva Academy of International Humanitarian Law and Human Rights. He previously worked at the ICRC’s legal training sector, the UNHCR office in Belgrade and the Belgrade Centre for Human Rights, engaging principally with the legal position of refugees and asylum-seekers in Serbia. He is the author of several publications dealing with international law and has spoken in various media outlets. Space law revisited (2/3): Are weapons of mass destruction prohibited in space? December 21, 2016. https://blogs.icrc.org/law-and-policy/2016/12/21/space-law-weapons-mass-destruction/]

The most widely ratified instrument of international space law, the Outer Space Treaty (OST), establishes a simple yet comprehensive regime limiting the use of weapons of mass destruction (WMDs) in or from outer space. Apart from the fact that nuclear weapons are mentioned specifically, space law does not define WMDs for its purposes, wherefore the term should be taken in the broadest possible sense.

Art. IV (1) of the OST states that States Parties “undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any manner.” Before analyzing the substantive meaning of this provision, it is necessary to point out that, while there is no definition of WMDs under international law, it is generally taken to include nuclear, chemical, radiological and biological weapons. Bearing in mind that chemical and biological weapons are prohibited as a matter of international humanitarian law (IHL), and that the use of radiological weapons remains hypothetical for the time being, the content of the norm is principally relevant with regard to the use of nuclear weapons, for which no such prohibition currently exists.

An incomplete prohibition

The terms applied by Art. IV of the OST, “place, install or station”, seem to indicate both an element of permanence to the State Party’s activity involving WMDs, but also an element of purpose. The latter point means that this provision would not prohibit engaging in activities which may potentially have the same disastrous consequences as the deliberate use of WMDs, such as using nuclear-powered spacecraft (although there is a UN General Assembly resolution concerning these issues); with respect to the permanency requirement, the provision contains no term which would cover simple use in the broadest sense, which means that the OST neither prohibits the use of WMDs against objects located in outer space, nor indeed would it prevent, in any manner, the launch of an ICBM carrying such a weapon from one point on the surface of the Earth to another (bearing in mind that the trajectory of some of these missiles may cross what is usually considered the altitude at which outer space begins) as long as the ICBM path does not amount to “in orbit around the Earth”.

It should, however, be borne in mind that Art. IV (2) of the OST foresees that the Moon and other celestial bodies be used “exclusively for peaceful purposes” and prohibits any military activity there save for those where military personnel or facilities are used for peaceful purposes; provided that “peaceful” means more than just “lawful”, this further implies that any manner of attack conducted against persons or objects on them would run contrary to the OST – including, of course, by WMDs. The 1979 Moon Agreement further clarifies this prohibition, stating unambiguously that “States Parties shall not place in orbit around or other trajectory to or around the Moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the Moon” (note that, as foreseen by Art. 1 (1), where the Moon Agreement uses the term “Moon”, it refers to all celestial bodies within the Solar System, other than the Earth). In spite of the fact that the Moon Agreement has not enjoyed widespread acceptance, particularly not among spacefaring nations, the provision detailing the WMD regime on celestial bodies, has never really been contested, with the Moon Agreement’s potentially limiting influence on development in space generally cited as the principal reason for States’ refusal to sign and ratify it.

Bearing in mind the above, a discussion of WMDs in space, for all practical intents and purposes, comes down to an analysis of the legal regime governing the use of nuclear weapons there. Space law is quite clear that they may not be positioned in outer space, nor that they may be installed upon celestial bodies; on the other hand, barring a general prohibition on the militarization or weaponization of space, the simple fact that an object carrying a WMD traverses outer space does not appear to be prohibited by the present state of the law. The remaining question is whether there is any norm in international law prohibiting the use of nuclear weapons against a space object?

The use of nuclear weapons against space objects

Although space law treaties as such remain silent on the matter, there is another treaty that could prove very relevant in this regard: the 1963 Partial Test Ban Treaty. The Treaty, inter alia, prohibits the carrying out of “any nuclear weapon test explosion, or any other nuclear explosion” in “the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas”; furthermore, the States Parties undertake to “refrain from causing, encouraging, or in any way participating in, the carrying out of any nuclear weapon test explosion, or any other nuclear explosion, anywhere which would take place in any of the environments described” (Art. 1).

There are two problems that may arise from said application of the Treaty, namely the fact that it may only have peacetime application, and then that it may only cover test explosions. In terms of the former, Art. IV of the Treaty states that it shall be of unlimited duration and that States Parties may withdraw from it with three months’ advance notice to the others, and only when they have judged that “extraordinary events (…) have jeopardized the supreme interests of its country.” This implies that the Treaty remains applicable in times of armed conflict; concerning the content of the prohibition, it is clear that the Treaty’s object is to prohibit “any nuclear weapon test explosion” in the aforementioned environments, but the addition of the term “or any other nuclear explosion” is particularly striking. While this could be taken as referring to non-test peacetime explosions such as their use for spacecraft propulsion, the term is sufficiently broad to allow the preceding argument. Likewise, the fact remains that a number of States invoked the Partial Test Ban Treaty as part of their arguments that the threat or use of nuclear weapons would be contrary to international law in their submissions to the International Court of Justice at the time of its advisory opinion on the matter (the ICJ did not pronounce its opinion regarding such an interpretation of the Treaty).

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To summarize, space law explicitly prohibits installing WMDs in outer space and on celestial bodies, and an argument can be made that it likewise prevents their use against objects in space given language contained in the Partial Test Ban Treaty. For all practical purposes, nuclear weapons are the only type of weapon that are relevant to this discussion at present, and if the above reading of the Partial Test Ban Treaty stands, then their use in space would be prohibited altogether.

#### 3. Space weapon deployment doesn’t cause an arms race or increase chance of war

Lopez 12 [LAURA DELGADO LO´ PEZ, Institute for Global Environmental Strategies, Arlington, Virginia. Astropolitics. "Predicting an Arms Race in Space: Problematic Assumptions for Space Arms Control." https://www.tandfonline.com/doi/full/10.1080/14777622.2012.647391]

The previous discussion demonstrates that although a globalized space arms race could follow U.S. deployment of space weapons, it is also plausible and more likely that it may not happen at all. As Mueller states: ‘‘In the end, most of the inevitability arguments are weak.’’62 The assumptions discussed here break the argument into a series of debatable maxims that other scholars have also considered. Hays, for instance, counters the inevitability argument by pointing out that previous ASAT tests did not have this purported destabilizing effect, to which we can add that even after the Chinese ASAT test, neither Russia nor the United States, who would be both capable and more politically likely to launch space weapons, moved forward in that direction.63 Although some may draw attention to the recent wake-up calls in order to underline a sense of urgency, one should also recall that when it seemed truly inevitable before, it did not happen either. In his detailed account of military space developments from 1945 to 1984, Paul Stares described how superpowers’ assessment of the value of space weapons shifted, with a ‘‘hiatus in testing’’ reflecting the attractiveness of satellites as military targets.64 In this changed landscape, Stares also assumed the inevitability argument, claiming that ‘‘the chances of space remaining a ‘sanctuary’ [absence of weapons] into the 21st century appear today to be remote.’’65 Perhaps the conditions are more conducive now, but the important point to be reiterated is that the outcome is not inevitable, and that any such prediction must be undertaken with caution.

One of the most prominent theorists to propose an alternate picture and pair it with an aggressive pro-space weapons stance is Everett Dolman. In his Astropolitik theory, Dolman summarizes the steps that the United States must take to assume control of space, particularly through withdrawal from the current space regime.66 This move, he argues, would benefit not only the United States, but also the rest of the world, since having a democracy controlling space is a catalyst for peace.67 Elsewhere, he writes: ‘‘Only a liberal world hegemon would be able to practice the restraint necessary to maintain its preponderant balance of hegemonic power without resorting to an attempt at empire.’’68 Accordingly, he believes that this strategy would be ‘‘perceived correctly as an attempt at continuing U.S. hegemony,’’69 but that other countries, correctly assessing U.S. leadership in space, would not seek to deploy their own systems. Having the ability to prevent the stationing of foreign weapons systems in space, he writes, ‘‘makes the possibility of large-scale space war and a military space race less likely, not more.’’70 In fact, he says, ‘‘to suggest that the inevitable result is a space arms competition is the worst kind of mirror-imaging.’’71 Dolman argues that the weaponization of space by the United States would ‘‘decrease the likelihood of an arms race by shifting spending away from conventional weapons systems,’’ which would reduce U.S. capabilities in territorial occupation and would thus be perceived as less threatening to other countries.7

#### Either the asteroids are small and not existential OR we’d have forever to prepare

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You may guess that, being an astronomer, anxiety about asteroid collisions keeps me awake at night. Not so. Indeed, this is one of the few threats that we can quantify— and be confident is unlikely. Every ten million years or so, a body a few kilometres across will hit the Earth, causing global catastrophe— so there are a few chances in a million that such an impact occurs within a human lifetime. There are larger numbers of smaller asteroids that could cause regional or local devastation. The 1908 Tunguska event, which flattened hundreds of square kilometres of (fortunately unpopulated) forests in Siberia, released energy equivalent to several hundred Hiroshima bombs. Can we be forewarned of these crash landings? The answer is yes. Plans are afoot to create a data set of the one million potential Earth- crossing asteroids larger than 50 metres and track their orbits precisely enough to identify those that might come dangerously close. With the forewarning of an impact, the most vulnerable areas could be evacuated. Even better news is that we could feasibly develop spacecraft that could protect us. A ‘nudge’, imparted in space several years before the threatened impact, would only need to change an asteroid’s velocity by a few centimetres per second to deflect it from a collision course with the Earth.