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#### Text – States should

* implement cooperative active debris removal measures aimed at mitigating debris from mega-constellations.
* cooperate on the development of a cloud-based infrastructure system between private and public entities with the purpose of advancing overall cyber security and create a protected mandatory reporting system for government contractors and critical infrastructure employees
* dismantle their antisatellite weapon systems and stop all development of space weapons
* adopt a system of market share liability in regard to the creation of debris in outer space by private entities in accordance with Munoz-Patchen 18

#### 1st plank solves Cyber-Attacks.

**Robertl and Vocl 21** [Christopher Robertl and Vince Vocl. Christopher is the Senior Vice President of Cyber Intelligence and Supply Chain Security Policy at the U.S. Chamber of Commerce. Vince VocI is the Executive Director Cyber Policy and Operations at the U.S. Chamber of Commerce. 5-14-2021, accessed on 8-8-2021, U.S. Chamber of Commerce, "4 Ways U.S. Government Leaders Can Protect IP and Personal Data", <https://www.uschamber.com/on-demand/cybersecurity/how-can-the-government-help-protect-intellectual-property-and-personal-data>] Adam

During the past several months, U.S. adversaries have carried out significant cyber-enabled espionage campaigns, impacting a wide range of public and private sector targets. With our nation’s cybersecurity at risk, government leaders have quickly turned to legislative solutions to protect our intellectual property and personal data.

Protected Mandatory Reporting Can Help Thwart Increasingly Sophisticated Cyberattacks

Since the [Cybersecurity Information Sharing Act of 2015](https://www.cisa.gov/publication/cybersecurity-information-sharing-act-2015-procedures-and-guidance#:~:text=of%20Mass%20Destruction-,Cybersecurity%20Information%20Sharing%20Act%20of%202015%20Procedures%20and%20Guidance,indicators%20with%20the%20Federal%20Government.) was passed, companies facing data breaches have been encouraged to share this information with the U.S. government. Yet cyberattacks have only become more sophisticated since then, according to [Sen. Mark Warner](https://www.warner.senate.gov/public/), chairman of the Senate Select Committee on Intelligence.

“There is an evolving belief that the 2015 structure, on a voluntary basis, is not giving us the level of comprehensive security that we need,” said Warner. “The bad guys, when they’re focused, they’re going to have a fairly high probability of getting in.”

In response, the Committee on Intelligence is working on a bipartisan level to create a structure that would mandate reporting for government contractors and critical infrastructure employees.

“Some of the privacy and other kinds of counter-incentives don’t take place,” Sen. Warner noted, adding that affected companies would have limited immunity and anonymized information. “We can pulse the overall system in a way that will allow [the] public sector and private sector to respond in a more comprehensive way.”

The U.S. Seeks to Work With Its Allies to Establish Cyber Incident Notification Systems

After creating a limited mandatory reporting system in the country, Warner hopes that the U.S. can work with its allies to establish similar notification systems as well as multilateral cyber norms.

“If our adversaries violate these norms and we can find appropriate attribution, there will be consequences to their actions,” Warner explained. “Our failure to have norms [and] a more robust notification system in existence … has allowed, in many ways, Russia and China to launch cyberattacks with virtual impunity.”

“This is a problem of protecting intellectual property … [and] personal information,” he continued. “As long as we can provide that level of limited immunity with anonymity so that those reports are then not made public, I think we can earn industry support.”

The U.S. Cyberspace Solarium Commission Outlines Priorities for 2021

In 2019, the U.S. Cyberspace Solarium Commission was chartered to manage cyber risk and significant cyber events at home and abroad. With several of the Commission’s recommendations being codified into law in 2020, this year has seen a renewed focus in engaging the private sector.

“We’re looking at ways that [we] can get to a common cloud-based environment between federal government agencies, state, local, tribal, territorial and the private sector, basically to get common visibility,” said Solarium commissioner [Frank J. Cilluffo](https://www.solarium.gov/commissioners/frank-cilluffo).

“We’re also going to be zeroing in on what we’re calling SICI (systemically important critical infrastructure) ... which will basically hone in on the most critical of our critical infrastructures, our lifeline sectors, and establish a set of … benefits and burdens to truly get to that partnership between the public and private sector,” Cilluffo added.

Public and Private Sector Collaboration Is Crucial to Cybersecurity Advancement

“We want to make sure that at the end of the day, our companies, our national security agencies and our citizens as a whole are enhancing their overall cybersecurity efforts,” stated Cilluffo. “The bottom line is, we need to follow up our ideas with the resources.”

“This is not going to be accomplished through Washington alone,” he stressed. “The private sector needs a front-row seat at his table and ultimately will be most critical to any success going forward.”

[Mark Montgomery](https://www.solarium.gov/about/staff/mark-montgomery), executive director of the Cyberspace Solarium Commission, agreed that partnership between the public and private sectors would be crucial for success in 2021.

“We actually have to build, pay for and establish infrastructure for collaboration,” Montgomery noted. “Once you do that, the companies will see that their equities are protected … and their opinions matter, and then we’ll get things done.”

#### 2nd solves for Mega-constellation Impacts.

Hardy 20, Brian Patrick. Long-term effects of satellite megaconstellations on the debris environment in low earth orbit. Diss. 2020. (Master of Science in Aerospace Engineering in the Graduate College of the University of Illinois at Urbana-Champaign)//Elmer

The results of this thesis demonstrate that satellite megaconstellations have the potential to leave a significant mark on the LEO debris environment, even centuries after they cease operations. Various test cases for the Starlink megaconstellation were analyzed in a new, medium-fidelity simulation for orbital debris evolution, and a variety of PMD and ADR rates for Starlink were considered. It was shown that if Starlink adheres only to the minimum regulatory requirement of 90% PMD for large constellations, then LEO debris levels will grow almost twice as fast as the baseline scenario with no megaconstellations. Improving Starlink’s PMD rate to 95% would lead to only 19% more debris, while 99% PMD is the preferred option that prevents any significant debris contributions at all. Importantly, Starlink’s choice of PMD strategy will affect its own collision risk very little over the short term, but the impact will be noticeable on multi-century timescales by the overall LEO environment. Finally, in scenarios with 90% and 95% PMD, active debris removal of non-operating Starlink satellites yields significant, if limited, benefits. The 90% PMD scenario combined with an ADR rate of 5 Starlink satellites per year, for example, is able to reduce debris levels to those seen for the 95% PMD scenario. This result suggests that active debris removal could be a viable mitigation strategy for megaconstellations with sub-optimal PMD rates.

#### 3rd plank solves second advantage – states won’t possess asat capability to escalate

#### 4th plank incentivizes sustainable use of space

**Munoz-Patchen 18** [Chelsea Munoz-Patchen, Chelsea Muñoz-Patchen is an associate in the Houston office of Latham & Watkins. While attending University of Chicago Law School, Ms. Muñoz-Patchen was an articles editor for The Chicago Journal of International Law. Her research on regulating space debris was published in 2018. Ms. Muñoz-Patchen served as a research assistant for Professors Daniel Abebe and Jonathan Masur, focusing on intellectual property and constitutional law in the US and Ethiopia. Prior to law school, Ms. Muñoz-Patchen earned her BA and BS in Geography from Arizona State University. As a graduate student, she studied political ecology and people’s relationship to urban nature, and taught Introduction to Physical Geography labs. 7-1-2018, Semanticscholar, "Regulating the Space Commons: Treating Space Debris as Abandoned Property in Violation of the Outer Space Treaty | Semantic Scholar", <https://www.semanticscholar.org/paper/Regulating-the-Space-Commons%3A-Treating-Space-Debris-Munoz-Patchen/607eff0141f48332a69ae8c5a3301d871057a4fa> accessed 12/21/21] Adam

* solves global commons

Market-share liability has been suggested as a way to deal with the difficulty of identifying the individual ownership of objects and it could be put to use in the obligation to clean up debris.154 Market-share liability would allow for the apportionment of responsibility based on the respective contribution to the risk, and would not require the identification of individual pieces of space debris.155 Market-share liability has already been successfully applied where multiple parties contribute to a dangerous situation, but where it is virtually impossible to tie a particular party to the harm caused.156 Market-share liability was created in 1980 in the case Sindell v. Abbott Labororatories. 157 In Sindell, the Supreme Court of California devised the concept in response to a case in which pharmaceuticals that were marketed to pregnant women caused cancer in their children at least a decade later.158 Since the latent period was so long, the women naturally could not remember the specific pill manufacturer out of two hundred such manufacturers.159 The court found that each defendant’s market share could be determined fairly accurately, and therefore used market share as a basis for the apportionment of liability.160 While market-share liability has not been broadly adopted, this is likely because cases with fungible products and a serious causation problem are rare.161 Academics have taken this idea and sought to apply it to space debris, which has similar fungibility and causation issues, but their applications have been limited to a tort-like context.162 One author suggested that whenever a collision occurs due to an unidentifiable piece of debris and a functional space object, liability and compensation should be apportioned “among spacefaring nations equal to the percentages of the total debris population for which the particular nation is responsible.” 163 This mechanism frees the victim from having to prove causation by a specific nation, when that would be virtually impossible.164 There will be difficulties calculating the percentage with precision in such a system, but there is fairly accurate information from the U.N. including registry, sampling, mathematical models, and other records of known collisions and the resultant debris.165 Without strong buy-in, it may be challenging to get this rarely used domestic tort theory to apply in international space law, especially with the potential for disputes over the proper apportionment of market share.166 The states primarily responsible for existing debris are the U.S., Russia, and China – powerful countries unlikely to be pleased with this newfound expense. That said, though these nations would be paying the highest cost, this would be proportional to their respective contributions to the problem. Indeed, these nations may welcome this remedy, because their space activity is threatened by the proliferation of space debris and they likely value continuing their extensive and advanced use of space. This solution solves the free rider problem and would compensate any nation or company that cleans up space such that any nation (like the U.S., Russia, or China) fearing the collapse of its space program and unwilling to bear all the cleanup costs itself would see this as an attractive solution. It is even possible that liable states like the U.S. and Russia will be eager to aid in debris identification, so as to add to other states’ liability.167 This regulatory remedy would resolve the current tragedy of the commons. By assigning responsibility for the cost of cleanup, nations or companies would be incentivized to begin cleanup operations, because they would know that others will not freeride on their costly efforts. Instead, they will have guaranteed compensation from those responsible. Obtaining the funds is crucial, particularly since the high cost of deploying existing technology to destroy space debris has been a hindrance thus far.168 Using market-share liability is also a useful way to compensate victims of debris collisions and to incentivize spacefaring nations to avoid creating new debris in the future.169 However, this does not do enough to remedy the persistent existence of space debris, which is threatening the very continuation of space activity. The Outer Space Treaty creates an obligation on states to carry out space activities “for the ‘benefit and interests of all countries,’ and that outer space shall never be subject to national appropriation.” 170 To uphold their obligations under this treaty, nations should not be creating debris, because it interferes with the ability of others to conduct their space activities, or perhaps keeps them from space altogether. Due to this legal violation, and the negative externality created by property abandonment, states should be required to pay for the disposal of debris in proportion to the amount they create. While the creation of debris may be unavoidable, there are existing practices that can greatly minimize the proliferation of debris, and any debris that is nonetheless created can be dealt with through market-share liability payments. This collection of market-share disposal payments would not simply be a tax on operations or tort compensation for harmful acts. Instead, once liability is apportioned, (and this could be done on an ongoing or periodic basis to reflect new developments), nations or companies undertaking actions to clean up space would be compensated for their costs by the nations responsible according to their percentage of responsibility. The U.N. Office for Outer Space Affairs (UNOOSA) could allocate the percentage of liability, drawing on its role in promoting international cooperation and the peaceful use of outer space, as well as preparing reports and studies.171 If any disputes were to arise from nonpayment, familiar procedures could be employed—perhaps by drawing from other notable space treaties that provide “established procedures for the peaceful settlement of disputes, in accordance with the Charter of the United Nations.” 172 In many of the space treaties and conventions, including the Liability Convention, disputes and claims can be brought to the SecretaryGeneral of the U.N.173 These bodies could be utilized here to assure fairness in allocating liability and handling routine compensation disputes. This new regulatory regime can thus be grounded in the existing space treaty regime and administered by existing authorities. It would resolve the incentive problems that exist in the international commons of space through regulation that allocates the cost of debris cleanup to those who have created and continue to create it. The regime can also adapt as the outer space marketplace and the actors who comprise it shift over time, and as the registry of space objects, incidents, and tracking capabilities improves. This regulatory regime also ultimately would allocate cleanup funds to parties who would like to continue to operate in space, removing the disincentive to carry the cost in the face of potential freeriding.

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#### India’s digital divide is increasing and has uniquely undermined economic growth.

**Beniwal 20** [Vrishti Beniwal, Vrishti is a journalist for Bloomberg and ThePrint. 12-17-20, "As digital divide widens, India risks losing a generation to pandemic disruption," ThePrint, <https://theprint.in/india/education/as-digital-divide-widens-india-risks-losing-a-generation-to-pandemic-disruption/568394/> accessed 2/9/22] Adam

Plenty of Indians are facing a similar predicament: As many as 80% of Indian students couldn’t access online schooling during the lockdown, and many might not return to classrooms when they reopen, according to a recent study by Oxfam.

That’s just one example of how the pandemic has exacerbated the country’s digital divide — the gap between those with the means and knowledge to benefit from the internet, and those without — worsening already stark levels of inequality and weighing on economic growth. While the divide isn’t unique to India, it’s especially acute in a nation where more than half the population of 1.3 billion people is under 25 years old.

When Prime Minister Narendra Modi announced lockdowns earlier this year, services from banking and schooling to medical consultations and job searches moved online, and in some cases remain there nine months later. Many companies see “work from home” as the new normal.

Before the pandemic, government researchers estimated India’s digital shift could unlock as much as $1 trillion of economic value over five years. But the crisis is spreading those benefits unevenly and widening socio-economic inequalities, with girls suffering more than boys and rural areas more affected than cities.

“The digital divide in India is an ongoing problem and the pandemic has definitely made it worse,” said Sumeysh Srivastava, a New Delhi-based internet-access researcher at Nyaaya, an open-access platform that provides simple and actionable legal information. “The government needs to ensure that all Indians are in position to benefit from digitization, otherwise we’re at risk of creating a new class of digitally poor citizens.”

Internet access

India has the world’s second-largest pool of internet users, about 600 million, comprising more than 12% of all users globally. Yet half its population lacks internet access, and even if they can get online, only 20% of Indians know how to use digital services, according to government data.

Every 10% increase in India’s internet traffic delivers a 3.1% increase in per-capita gross domestic product, according to a 2018 report by the Indian Council for Research on International Economic Relations. But the benefits of those gains aren’t reaching everyone: Srivastava said government-run digital literacy programs cover 5% or less of the population, are focused only on rural areas and suffer from various design and implementation issues.

“The digital revolution has made services more tradable and enabled India to grow rapidly with a different growth model compared to China,” said Ejaz Ghani, a former economist at the World Bank. “But this is now being restrained by the digital divide.”

The launch of online job portals for laborers and e-passes to move around during the lockdown meant Indians who aren’t digitally literate could have lost out on livelihood opportunities.

#### Mega constellations are expanding access in India now.

**Vanamali 21** [Krishna Veera Vanamali, 11-9-2021, "Starlink and OneWeb: Can satellite broadband bridge India's digital divide?," Business Standard, [https://www.business-standard.com/podcast/current-affairs/starlink-and-oneweb-can-satellite-broadband-bridge-india-s-digital-divide-121110900035\_1.html accessed 2/9/22](https://www.business-standard.com/podcast/current-affairs/starlink-and-oneweb-can-satellite-broadband-bridge-india-s-digital-divide-121110900035_1.html%20accessed%202/9/22)] Adam

70% of India’s rural population does not have Internet access Union government had launched Digital India scheme to connect rural areas with Internet 1.78 lakh gram panchayats connected with optical fibre so far The target is to provide broadband connectivity to 2.5 lakh gram panchayats Internet penetration in the country stood at around 50% in 2020 India had launched [BharatNet](https://www.business-standard.com/topic/bharatnet" \t "_blank)project in 2011 to ensure that every village panchayat in the country has broadband Internet connectivity. But, according to a report in 2020, half of India’s population still does not have Internet access. And 70% of the country’s rural population is yet to log in to the Internet. Till date, [BharatNet](https://www.business-standard.com/topic/bharatnet" \t "_blank)connections have been provided to 1.78 lakh gram panchayats. In June this year, the Union Cabinet approved the implementation of the project in 16 states through the Public Private Partnership Model (PPP). When it comes to wired broadband, India had only 24.3 million customers at the end of August, most of whom are urban subscribers. How satellite-based internet service works Starlink and OneWeb are among a number of companies which use Low-Earth Orbit satellites to provide high-speed broadband Internet services around the world, with a special focus on remote areas where deploying mobile towers or fiber optic cables are difficult. These satellites can beam the Internet to virtually anywhere on the earth. Starlink and OneWeb Starlink is a subsidiary of Elon Musk’s rocket company SpaceX OneWeb is owned by Sunil Mittal’s Bharti Group along with the British government Leading the race, Starlink has already deployed more than 1,700 satellites in low-earth orbit Sensing the opportunity, Starlink and OneWeb are looking to provide the unserved areas with the Internet. Starlink is a subsidiary of Elon Musk’s rocket company [SpaceX](https://www.business-standard.com/topic/spacex)and OneWeb is owned by Sunil Mittal’s Bharti Group along with the British government. Starlink is one of a growing number of companies launching small satellites as part of a low-Earth orbiting network to provide low-latency broadband Internet services around the world, with a particular focus on remote areas that terrestrial Internet infrastructure struggles to reach. [Satellite](https://www.business-standard.com/topic/satellite)broadband wars Starlink has already deployed more than 1,700 satellites in low-earth orbit, against a target of having 12,000 satellites in its constellation. Meanwhile, OneWeb has put 322 satellites into orbit and plans to have 648 of them by the middle of next year. Starlink currently serves about 100,000 users in 14 countries. Recently, Starlink established a subsidiary in India headed by former PayPal executive Sanjay Bhargava as it gears up to launch its services in the country. It has already received over 5,000 pre-orders for its devices in India. But there are some factors which could hit its Indian venture, it’s the high cost is one of them

#### Constellations will bridge digital divide – costs fall over time.

**Croshier 22** [Rose Croshier, Rose Croshier is a policy fellow at the Center for Global Development, where her work focuses on enabling low and middle-income countries’ adoption of space-based technology. Before joining CGD, Croshier was an accomplished program and operations manager with the U.S. Air Force, specializing in areas such as Space Operations, Security Cooperation, Peacekeeping, Disaster Management and Military Intelligence. 1-19-2022, "Space and Development: Preparing for Affordable Space-Based Telecommunications," Center For Global Development, [https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications accessed 2/9/22](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications%20accessed%202/9/22)] Adam

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The starting block for emerging NGSO constellations providing 4G-5G broadband in the commercial space sector has been set thus far by Starlink, costing approximately $500 for a company-subsidized all-inclusive receiver, wifi router and hardware set and about $100 per month, uncapped, broadband subscription.

A combined “first month” cost of $600 is still not realistic for the majority of the undercovered or underconnected population, as illustrated in Figure 6.[[24]](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications#edn24) Using India as an example, even though a Starlink antenna and broadband subscription is steeply cheaper than traditional VSAT options on the market today, it is still seven to eight times more expensive than what is typically available in India’s urban, in-network areas.[[25]](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications#edn25)[[26]](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications#edn26) A MIT study examining 37 countries determined that even though Starlink’s data is unlimited, the flat fee of $100 per month is affordable for only about 15 percent of the undercovered population. Starlink’s greatest potential for early uptake is in rural areas of high-income countries, or undercovered areas of middle-income countries in South America and Southeast Asia.

Over the following decade, however, the same study suggested NGSO satellite prices may drop closer to $30 per Mbps per month, opening up affordability to about 60 percent of the population considered. While these costs are more than what many individual households can afford, civil society organizations, government, and non-governmental organizations can take action to increase sustainability and uptake. Many rural communities, frustrated by the high for-profit cost of rural internet, have successfully established small, cooperative-owned, internet service provider community networks, like the Zenzeleni network in South Africa. These networks have made impressive progress in localizing use and boosting affordability of high-speed broadband.[[27]](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications#edn27)[[28]](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications#edn28)

Most promising, satellite-to-cellphone constellations like Lynk provide a shorter-term jump in both accessibility and affordability. Since they are designed to be incorporated into local mobile network operator’s ecosystem, then the access problem would be addressed, and the cost at level with the local market for cellphones and mobile credit.

Several other innovative approaches, like utilizing television “white space” (TVWS), or “buffer” space between television channels in the radio frequency spectrum to provide cheap broadband internet access, or using drones and balloons to extend middle and last mile coverage, provide additional alternatives for consideration. TVWS may fade as a viable option as countries become more efficient at reducing unused spectrum. Balloons and drones require significant in situ management and maintenance, thus making them less practical for expanding telecommunications infrastructure in developing countries.[[29]](https://www.cgdev.org/publication/space-and-development-preparing-affordable-space-based-telecommunications#edn29)

#### Indian economic strength deters China along the India-China border---military buildup and signal of resolve diffuses conflict.

**Haqqani and Pande 21** [Husain Haqqani and Aparna Pande 7-10-21. Haqqani is the director for South and Central Asia at the Hudson Institute in Washington D.C. and was Pakistan’s ambassador to the United States. Pande (Ph.D) is director of the Initiative on the Future of India and South Asia at the Hudson Institute. "India has a long way to go in confronting China". The Hill. https://thehill.com/opinion/international/562397-india-has-a-long-way-to-go-in-confronting-china]

India’s decision to move [50,000](https://www.bloomberg.com/news/articles/2021-06-27/india-shifts-50-000-troops-to-china-border-in-historic-defense-shift) additional troops to its border with China bolsters its ability to protect itself against Chinese aggression. It is a belated response to China’s actions [last year](https://www.bbc.com/news/world-asia-57234024), when the Chinese army [surprised](https://www.reuters.com/article/us-india-china-military-families-insight-idUSKBN2460YB) ill-prepared Indian soldiers and occupied several square miles of Indian territory in the Ladakh region to build roads and fortify military encampments. The hope of some Indian policymakers to resolve the matter diplomatically has not so far been fulfilled. Several rounds of military and diplomatic negotiations since April 2020, when the Chinese incursions started, have yielded little result. Any willingness on India’s part to deal forcefully with China would be welcomed in the U.S., where successive administrations have sought to integrate India into America’s Indo-Pacific strategy. Several years of an India-U.S. entente cordiale has been premised on India standing up to China. After all, with a population of more than one billion, India is the only country with enough manpower to match that of China. China sees India as a potential rival and covets parts of Indian territory. China [occupied](https://www.reuters.com/article/idINIndia-43780820091108) 15,000 miles of Indian territory in the Aksai Chin section of Ladakh after war in 1962. China’s desire for influence in South Asia and the Indian Ocean Region challenges India in its backyard, setting off [competition](https://www.tandfonline.com/doi/abs/10.1080/09700160801886314) for the same sphere of influence. But China’s phenomenal economic growth, coupled with India’s inability to keep pace, has hampered India’s ability to respond to China strategically. Even now the moving of troops to Ladakh is a tactical maneuver not backed by a clear strategic plan. On [four](https://www.washingtonpost.com/business/why-chinese-and-indian-troops-are-clashing-again/2020/09/11/c5939466-f402-11ea-8025-5d3489768ac8_story.html) occasions since 2012, China has indulged in salami-slicing along the largely un-demarcated India-China border. India’s response each time has been limited to diplomatic negotiations with limited military pushback. There is a co-relation between relative economic strength and China’s willingness to flex its muscle. Between 1988, when India and China signed a series of agreements to restore relations, and 2012, the border between India and China remained by and large quiet. During that period, the size of the two countries’ economies was not huge. In 1990, India’s GDP stood at $320 billion and China’s GDP at $413 billion. By 2012, China’s GDP had grown to $8.5 trillion, seven times larger than India’s $1.2 trillion economy. The [change](https://timesofindia.indiatimes.com/home/sunday-times/all-that-matters/chinas-rising-support-for-pakistan-and-their-collusion-may-affect-our-interests-says-former-nsa-shiv-shankar-menon/articleshow/82234601.cms) in China’s policy after 2012, encouraging its troops to use force against India along the border, coincided with the rise in China’s military and economic power and its impact on the relative balance of power with India. Like many in the West, India during the 1990s had bought into the view that deeper economic and diplomatic engagement with communist China would help maintain peace between the two Asian giants. But the India-China border dispute could not remain on the back burner as China became more aggressive in the wake of growing economic and military power. India can no longer rely solely on diplomacy to deal with China. It will soon have to build and deploy hard power to deter the Chinese. The recent deployment along the Ladakh border could mark the beginning of that process. With the latest addition, 200,000 of India’s more than a million strong army now face China along the 2,167-mile border. By way of comparison, 600,000 Indian troops are positioned along the 2,065-mile, fully fenced and fully demarcated border with Pakistan. It is inconceivable that any attempt by Pakistan to take territory would go unretaliated by India. While India’s attempts over the last year have been to convince China, primarily through diplomatic engagements, to return the border to status quo ante, most [military](https://www.orfonline.org/research/eastern-ladakh-the-longer-perspective/) and [strategic](https://www.lowyinstitute.org/publications/crisis-after-crisis-how-ladakh-will-shape-india-s-competition-china) experts argue that China has no interest in resolving the border dispute with India. India has for far too long acquiesced to Chinese aggression without sufficient retaliatory military action. India may not seek to provoke China into an all-out war, but it needs to find a sweet spot between ignoring and provoking. The United States and its allies, too, would like India to act like a major power in not taking Chinese provocations lightly. Western democracies and Japan have viewed India as an ideal partner and future ally in Asia and the Indo-Pacific. India has consistently been a democracy, shares pluralist values with the United States, and its embrace of free market reforms since 1992 have created an opening for expanded economic ties. India also shares America’s concerns about China’s rising power. In developing a pivot to Asia or an Indo-Pacific policy, successive U.S. administrations have assumed that a shared concern about China makes India a natural American ally. India-U.S. relations were referred to as the “[defining](https://www.google.com/search?q=obama+india+defining+partnership+of+21st+century&rlz=1C1GGRV_enUS751US751&oq=obama+india+defining+partnership+of+21st+century&aqs=chrome..69i57j33i160j33i299.7702j0j7&sourceid=chrome&ie=UTF-8) partnership of the 21st century” under President Obama. The Trump administration’s [2017](https://trumpwhitehouse.archives.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf) National Security Strategy spoke of India as a “leading global power” and a strong “strategic and defense partner.” The Biden administration’s [March](https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/03/interim-national-security-strategic-guidance/) 2021 “Interim National Security guidance” has described the “deepening partnership” with India as being critical to America’s “vital national interests.” But the Indo-Pacific policies of both the Trump and Biden administrations have focused on maritime security, ignoring India’s challenge from China on the continental landmass. China views India as an inward-looking democracy that has yet to focus on economic growth or military prowess. Only an expansion in India’s economy and military capability would convince China’s leaders to view it differently. Moreover, the two decades of celebrating convergence of democratic values and voicing of strategic concerns by Washington and Delhi now needs to be followed up with specific steps to counter Chinese hard power with Indian muscle.

#### That goes nuclear.

Rachman 20 “Erosion of nuclear deterrence makes India-China relations critical” GIDEON RACHMAN [Gideon Rachman became chief foreign affairs columnist for the Financial Times in July 2006. He joined the FT after a 15-year career at The Economist, which included spells as a foreign correspondent in Brussels, Washington and Bangkok.] September 7, 2020 <https://www.ft.com/content/311694ac-d1a4-4d92-a850-97e161ad887c> SM

Erosion of nuclear deterrence makes India-China relations critical

Countries with nuclear weapons are moving closer to military confrontation

My generation grew up in the shadow of a possible nuclear war. I was born a few months after the Cuba missile crisis — the closest humanity has come to nuclear Armageddon. The Campaign for Nuclear Disarmament was a big political force as I was growing up.

My children’s generation are much more likely to demonstrate against climate change than nuclear weapons. Leading politicians also no longer worry so much about nukes. Nuclear arms-control negotiations, a staple of the cold war, have fallen into abeyance. But this relatively relaxed attitude is having a paradoxical effect. It seems to be making countries armed with nuclear weapons more willing to risk military confrontation with each other.

There are three international rivalries where tensions between nuclear-weapons states are reaching dangerous levels. The biggest current risk is on the China-India border — where recent clashes have led to 21 Indian fatalities and an unknown number of Chinese casualties. Military tensions are also rising between China and the US in the Pacific. Meanwhile, the crisis in Belarus has led to fears of Russian military intervention, which would put Nato on alert.

The erosion of nuclear deterrence gives rise to two distinct, but related, risks. The first is of a conventional war, which could happen if two nuclear-weapons states believe they can fight each other without the risk of nuclear escalation. The second is of a nuclear war, which could happen if a conventional war escalated unexpectedly.

During the cold war, the US and the USSR were too conscious of the dangers of nuclear warfare ever to risk striking each other directly with conventional weapons. But the Chinese leadership has taken the risk of killing Indian troops, despite India's possession of nuclear weapons — and New Delhi is pushing back.

The deadly clash in the Himalayas over the summer was only the second time that two nuclear-weapons states have fought. The first was the Kargil war between India and Pakistan in 1999. That confrontation did not go nuclear. But it left world leaders profoundly shaken. Bill Clinton, the US president at the time, called the frontline where the two sides had clashed “the most dangerous place in the world”.

There are fewer nuclear-alarm sirens sounding this time around. Most experts take comfort from the fact that India and China both have a policy of “no first use” of nuclear weapons. But if Beijing and New Delhi’s confidence that the other side will not use nuclear weapons persuades China to press home its military advantage, then India may be tempted to alter its policy in an attempt to restore deterrence. Some experts point to the possibility of India deploying tactical nuclear weapons in the Himalayas, or formally renouncing its no-first-use policy.

Threatening to use nuclear weapons is always tempting for a country that fears it might lose a conventional war. Pakistani military doctrine envisages an early resort to nuclear weapons, in the event of an invasion by India that would otherwise lead to defeat.

### 1NC---OFF

#### Xi is tightening control over the PLA but completing goals are critical.

Krishnan 21 – Ananth, 11/18/21, [‘Xi tightened control over the PLA’, TheHindu, <https://www.thehindu.com/news/international/xi-tightened-control-over-the-pla/article37549460.ece>] Justin

The new resolution on history passed last week by China’s ruling Communist Party has said that President Xi Jinping had tightened control over the military to address the party’s “obviously lacking” leadership of the armed forces under his predecessors.

The full text of the resolution, released on Tuesday evening, listed some of the actions taken by the People’s Liberation Army (PLA) under Mr. Xi, who is also the chairman of the Central Military Commission. These included what the document described as “major operations related to border defence”.

No specifics

It did not specify what those major operations were. China has unresolved land borders with India and Bhutan. In April 2020, the PLA mobilised two divisions and carried out multiple transgressions across the Line of Actual Control (LAC) in Eastern Ladakh, sparking the worst crisis along the border in many years. Talks to resolve the tensions are still on-going.

“The armed forces have remained committed to carrying out military struggles in a flexible manner to counter military provocations by external forces, and they have created a strong deterrent against separatist activities seeking ‘Taiwan independence,’” the resolution said.

“They have conducted major operations related to border defence, protecting China’s maritime rights, countering terrorism and maintaining stability, disaster rescue and relief, fighting COVID-19, peacekeeping and escort services, humanitarian assistance, and international military cooperation.”

Last week’s resolution on history was only third such document putting forth the official view on party history, following resolutions passed by Mao Zedong in 1945 and Deng Xiaoping in 1981.

The new resolution dealt more with the future than the past. It essentially reaffirmed the official view on history, saying that the “basic points and conclusions” of past resolutions “remain valid to this day.”

It repeated the conclusion reached in 1981 on Mao’s errors noting that “mistakes were made” and that “Mao Zedong’s theoretical and practical errors concerning class struggle in a socialist society became increasingly serious” leading to the disasters of the Cultural Revolution.

Criticism of predecessors

Much of the new resolution focuses on emphasising Mr. Xi’s leadership and calling for the party to support his “core” status. It only briefly mentioned Mr. Xi’s predecessors Jiang Zemin and Hu Jintao, and implicitly critcised some aspects of their leadership including on military matters.

“For a period of time, the party’s leadership over the military was obviously lacking,” it noted. “If this problem had not been completely solved, it would not only have diminished the military’s combat capacity, but also undermined the key political principle that the party commands the gun.”

The document said Mr. Xi’s leadership had tightened supervision on the military including boosting “troop training and battle preparedness”, and it repeated China’s stated goals of completing the modernisation of its armed forces by 2035 and building a “world class” military by 2050, which observers see as meaning on par with the U.S.

‘Working vigorously’

“To build strong people’s armed forces, it is of paramount importance to uphold the fundamental principle and system of absolute party leadership over the military, to ensure that supreme leadership and command authority rest with the party Central Committee and the Central Military Commission (CMC), and to fully enforce the system of the CMC chairman assuming overall responsibility,” the resolution said, adding that “setting their sights on this problem, the Central Committee and the CMC have worked vigorously to govern the military with strict discipline in every respect.”

#### Megaconstellations are part of China’s core space agenda, is seen as their greatest opportunity to compete with the West, and is a national priority – the private sector is key and the plan is a 180

**Jones, 21** (Ash Jones, 4-27-2021, accessed on 1-23-2022, Industry Europe, "China's plans for a 13,000 satellite megaconstellation", https://industryeurope.com/sectors/aerospace-defence/china-s-plans-for-a-13-000-satellite-megaconstellation/)azhang

by Ash Jones 27 April 2021 14:00 China has announced plans to oversee and construct a megaconstellation - used for sending satellite internet services - made up of a little under 13,000 satellites through a coordinated effort involving many of the country's key space players. Satellites are used to project networks across the globe; pictured is an artists' rendition of a global satellite internet network. Credit: ESA Plans for this have been publicly known since at least October 2020, when analysts predicted the Chinese state would move to create a Low Earth Orbit (LEO) constellation to compete with major western rivals such as Amazon, OneWeb and SpaceX. Read more: NASA & California partner on methane-mapping satellite project Recent comments by Chinese state officials suggest it may already make use of existing satellite infrastructure, potentially forming part of the larger "Guoweng" network, part of its idea for a national internet network. These have come as a boost to previous plans for similar networks made last year. SpaceNews reported on April 21 that spectrum filings were submitted to the International Telecommunication Union (ITU) by China in September last year. The filings show as many as 12,992 satellites will make up the constellation, although there are fears this would only serve China's interest by operating state-run media and intranet outlets. These would lie - as the name LEO suggests - in low orbit, anywhere between 500 and 1500 km and would operate under a number of frequency bands. In a March 7 interview with Shanghai Securities News, Bao Weimin, a senior official with the state-owned China Aerospace Science and Technology Bao Weimin. Credit: SASAC Corp. (CASC) revealed it had already launched some test satellites. “We are planning and developing space Internet satellites and have launched test satellites," he said. "A 'State Grid' company will also be established to be responsible for the overall planning and operation of space Internet construction." Washington DC-based analyst Bhavya Lal surmised that out of the 20 or so Chinese companies engaged in satellite technologies, fewer than a dozen had proposed the use of constellation at the time the filings were submitted. “Many focus on narrowband communications, targeting markets such as the Internet of Things (IoT)," he said in a statement released in October 2020, adding that many of the state-owned outlets "[had] the deeper pockets needed to rapidly launch satellite constellations." She concluded that many of the private companies lacked the required hardware to launch. Read more: The satellite drone that can beam 5G from the stratosphere She said: “However, as in other areas, the Chinese are making fast progress. The best we can tell the current focus of most companies is domestic. But as the Chinese have done in other areas such as high-speed rail, it would be not a stretch of the imagination that once the bugs in the system are worked out domestically, the Chinese will begin to market services internationally.” It is currently unknown if any of this has changed in the six months since it broke. In mid-April Ge Yujung, the president of China Spacesat, another key player, revealed the previously planned satellite clusters would be altered to fit a new plan, saying the Hongyan and Hongyun systems would "undergo major changes" by "relevant government authorities." He also revealed plans for the constellations have been in development since at least 2018 and that CASC was planning to launch at least 60 satellites by 2022. It is currently unclear how the project will proceed, but news reports indicate it has become a national priority. SpaceX's global satellite network was completed in early April, and the network is now active. It is likely China has issued this as a national priority in order to compete with western rivals.

#### That triggers backlash – they don’t support restrictions on the space sector and will do everything to convince leaders not to do the plan – independently, is a reason the plan gets circumvented

Cheng 14 [Dean Cheng, Senior Research Fellow in the Asia Studies Center at the Heritage Foundation, Former Senior Analyst at the China Studies Division of the Center for Naval Analyses, Former Senior Analyst with Science Applications International Corporation, “Prospects for U.S.-China Space Cooperation”, Testimony before the Committee on Commerce, Science, and Transportation, United States Senate, 4/9/2014, https://www.heritage.org/testimony/prospects-us-china-space-cooperation]

At the same time, space is now a sector that enjoys significant political support within the Chinese political system. Based on their writings, the PLA is clearly intent upon developing the ability to establish “space dominance,” in order to fight and win “local wars under informationized conditions.”[8] The two SOEs are seen as key parts of the larger military-industrial complex, providing the opportunities to expose a large workforce to such areas as systems engineering and systems integration. It is no accident that China’s commercial airliner development effort tapped the top leadership of China’s aerospace corporations for managerial and design talent.[9] From a bureaucratic perspective, this is a powerful lobby, intent on preserving its interests. China’s space efforts should therefore be seen as political, as much as military or economic, statements, directed at both domestic and foreign audiences. Insofar as the PRC has scored major achievements in space, these reflect positively on both China’s growing power and respect (internationally) and the CCP’s legitimacy (internally). Efforts at inducing Chinese cooperation in space, then, are likely to be viewed in terms of whether they promote one or both objectives. As China has progressed to the point of being the world’s second-largest economy (in gross domestic product terms), it becomes less clear as to why China would necessarily want to cooperate with other countries on anything other than its own terms. Prospects for Cooperation Within this context, then, in. China’s past experience of major high-technology cooperative ventures (Sino–Soviet cooperation in the 1950s, U.S.–China cooperation in the 1980s until Tiananmen, and Sino–European space cooperation on the Galileo satellite program) is an unhappy one, at best. The failure of the joint Russian–Chinese Phobos–Grunt mission is likely seen in Beijing as further evidence that a “go-it-alone” approach is preferable. Nor is it clear that, bureaucratically, there is significant interest from key players such as the PLA or the military industrial complex in expanding cooperation.[10] Moreover, as long as China’s economy continues to expand, and the top political leadership values space efforts, there is little prospect of a reduction in space expenditures—making international cooperation far less urgent for the PRC than most other spacefaring states. [FOOTNOTE] [10]It is worth noting here that the Chinese Ministry of Foreign Affairs is not a part of the CCP Politburo, a key power center in China. Thus, the voice of the Ministry of Foreign Affairs is muted, at best, in any internal debate on policy. [END FOOTNOTE] If there is likely to be limited enthusiasm for cooperation in Chinese circles, there should also be skepticism in American ones. China’s space program is arguably one of the most opaque in the world. Even such basic data as China’s annual space expenditures is lacking—with little prospect of Beijing being forthcoming. As important, China’s decision-making processes are little understood, especially in the context of space. Seven years after the Chinese anti-satellite (ASAT) test, exactly which organizations were party to that decision, and why it was undertaken, remains unclear. Consequently, any effort at cooperation would raise questions about the identity of the partners and ultimate beneficiaries—with a real likelihood that the PLA would be one of them.

#### An unhinged PLA triggers Himalayan war – goes global

Chellaney 17 [Dr. Brahma Chellaney, Professor of Strategic Studies at the Center for Policy Research and Fellow at the Robert Bosch Academy, PhD in International Studies from Jawaharlal Nehru University, “Why the Chinese Military’s Rising Clout Troubles Xi Jinping”, The National, 9/9/2017, https://www.thenational.ae/opinion/why-the-chinese-military-s-rising-clout-troubles-xi-jinping-1.626815?videoId=5754807360001]

China’s president Xi Jinping has stepped up his domestic political moves in the run-up to the critical 19th national congress of the Chinese Communist Party next month, but he is still struggling to keep the People’s Liberation Army (PLA) in line. China’s political system makes it hard to get a clear picture, yet Mr Xi’s actions underscore the troublesome civil-military relations in the country. Take the recent standoff with India that raised the spectre of a Himalayan war, with China threatening reprisals if New Delhi did not unconditionally withdraw its forces from a small Bhutanese plateau, which Beijing claims is Chinese territory. After 10 weeks, the face-off on the Doklam Plateau ended with both sides pulling back troops and equipment from the site on the same day, signalling that Beijing, not New Delhi, had blinked. The mutual-withdrawal deal was struck just after Mr Xi replaced the chief of the PLA’s joint staff department. This key position, equivalent to the chairman of the US joint chiefs of staff, was created only last year as part of Mr Xi’s military reforms to turn the PLA into a force “able to fight and win wars”. The Doklam pullback suggests that the removed chief, Gen Fang Fenghui, who has since been detained for alleged corruption, was an obstacle to clinching a deal with India. To be sure, this was not the first time that the PLA’s belligerent actions in the Himalayas imposed diplomatic costs on China. A classic case happened when Mr Xi reached India on a state visit in September 2014. He arrived on Indian prime minister Narendra Modi’s birthday with a strange gift for his host, a predawn Chinese military encroachment deep into India’s northern region of Ladakh. The encroachment, the worst in many years in terms of the number of intruding troops, overshadowed Mr Xi’s visit. It appeared bizarre that the military of an important power would seek to mar the visit of its own head of state to a key neighbouring country. Yet Chinese premier Li Keqiang’s earlier visit to New Delhi in 2013 was similarly preceded by a PLA incursion into another part of Ladakh that lasted three weeks. Such provocations might suggest that they are intentional, with the Chinese government in the know, thus reflecting a preference for blending soft and hard tactics. But it is also possible that these actions underscore the continuing “disconnect between the military and the civilian leadership” in China that then US defence secretary Robert Gates warned about in 2011. During his 2014 India trip, Mr Xi appeared embarrassed by the accompanying PLA encroachment and assured Mr Modi that he would sort it out upon his return. Soon after he returned, the Chinese defence ministry quoted Mr Xi as telling a closed-door meeting with PLA commanders that “all PLA forces should follow the president’s instructions” and that the military must display “absolute loyalty and firm faith in the party”. Recently Xi conveyed that same message yet again when he addressed a parade marking the 90th anniversary of the PLA’s creation on August 1, 1927. Donning military fatigues, Mr Xi exhorted members of his 2.3-million-strong armed forces to “unswervingly follow the absolute leadership of the party.” Had civilian control of the PLA been working well, would Mr Xi repeatedly be demanding “absolute loyalty” from the military or asking it to “follow his instructions”? China does not have a national army; rather the party has an army. So the PLA has traditionally sworn fealty to the party, not the nation. Under Mr Xi’s two immediate predecessors, Hu Jintao and Jiang Zemin, the PLA gradually became stronger at the expense of the party. The military’s rising clout has troubled Mr Xi because it hampers his larger ambition. As part of his effort to reassert party control over the military, Mr Xi has used his anti-corruption campaign to ensnare a number of top PLA officers. He has also cut the size of the ground force and established a new command-and-control structure. But just as a dog’s tail cannot be straightened, asserting full civil control over a politically ascendant PLA is proving unachievable. After all, the party depends on the PLA to ensure domestic order and sustain its own political monopoly. The regime’s legitimacy increasingly relies on an appeal to nationalism. But the PLA, with its soaring budgets and expanding role to safeguard China’s overseas interests, sees itself as the ultimate arbiter of nationalism. To make matters worse, Mr Xi has made many enemies at home in his effort to concentrate power in himself, including through corruption purges. It is not known whether the PLA’s upper echelon respects him to the extent to be fully guided by his instructions. In the past decade, the PLA’s increasing clout has led China to stake out a more muscular role. This includes resurrecting territorial and maritime disputes, asserting new sovereignty claims, and using construction activity to change the status quo. China’s cut-throat internal politics and troubled civil-military relations clearly have a bearing on its external policy. The risks of China’s rise as a praetorian state are real and carry major implications for international security.

#### Extinction.

Caldicott 17 – Helen, 2017, Founder of Physicians for Social Responsibility [“The new nuclear danger: George W. Bush's military-industrial complex,” The New Press]//Elmer

The use of Pakistani nuclear weapons could trigger a chain reac­tion. **Nuclear-armed India, an ancient enemy, could respond** in kind. China, India's hated foe, could react if India used her nuclear weapons, triggering a nuclear [war] ~~holocaust~~ on the subcontinent. If any of either **Russia** or **America**'s 2,250 strategic weapons on hair-trigger alert were launched either **accidentally** or **purposefully** in response, **nuclear winter** would ensue, meaning the **end of most life on earth**.

### 1NC---OFF

#### Cosmobiopolitics constitutes the governance of Outer Space as a shared resource mean to be used to further Human Progress. The Aff’s managerial at “saving” space merely sustains space as a common good for “joint usage” to further exploitation.

Damjanov 15, Katarina. "The matter of media in outer space: Technologies of cosmobiopolitics." Environment and Planning D: Society and Space 33.5 (2015): 889-906. (Faculty of Arts, University of Western Australia)//Elmer

Long before the beginning of the Space Age, humans used the regions above the globe to facilitate mediation practices; electromagnetic waves, for example, were emitted across airspace and into the atmosphere to enable radio communication decades before the first artificial satellite confirmed its arrival in the planet’s orbit on 4 October 1957. With its possible roots in early societies’ use of the celestial bodies visible from the earth’s surface for temporal and spatial orientation, the ‘media history’ of the human use of outer space reaches a watershed moment with the launch of Sputnik. This basketball-sized metal sphere, equipped with radio transmitter and four external antennas, was the first solid object, the first functional media artefact that humans had placed outside their own world. This is not to say that Sputnik marks the event in which human mediation practices begun to materially impact outer space, erasing its original, ‘natural’ state – the radio signals that penetrated the layers of the troposphere and ionosphere, although intangible, left their own material traces, environmental alterations comparable with the material results of atmospheric pollution triggered by industrial progress. These early uses of space have entangled it in a gamut of processes of techno-mediation, initiating the extraterrestrial unfolding of a historical trajectory which Jussi Parikka (2011: 3) terms ‘medianature’ – they have extended this ‘continuum between mediatic apparatuses and their material contexts in the exploitation of nature’ into outer space. However, Sputnik’s orbital presence does represent a steppingstone in the extraterrestrial progression of human medianature: it indicates the species’ acquired ability to purposefully introduce an object of technical media into outer space. As such, Sputnik epitomises a shift in the use of non-terrestrial spaces; no longer were they incidental and remote to human media exploits, they were instead made central and essential. What the first signal that Sputnik sent to its ground control announced was that humanity’s techno-logic aspirations to transform the material world and advance its productive capacity through the logic of acquisition, investment and destruction – an intrinsic human impulse described by Karl Marx (1964) as our essence of species-being – are no longer earth-bound. Sputnik and all media devices that followed it have been gradually converting outer space into a living milieu, reinforcing it as a material–social setting of human circumstances and relations. The concept of ‘milieu’ is important for understanding the complexities involved in the cosmobiopolitical transformation of outer space. In Foucault’s work and in other influential texts such as those of his mentor Georges Canguilhem (2008) and Simondon (1980) and Stiegler (1998), although employed in different contexts, the term ‘milieu’ essentially designates a site which simultaneously conditions and is itself conditioned by the productive forces of human life – whether biological, social or technical. Courses of medianature in outer space sharpen such perspectives on mutually transforming relations between humans and their milieu, providing biopolitical focus to Simondon’s and Stiegler’s perspectives on technology as fundamental in constituting human life. Stiegler’s view of progress as human technological evolution frames technical objects as a prosthesis in whose creation humans embed their ‘interiors’ and through which they further exteriorise and mould their living milieu, a process which has been changing the idea of what it is to be human (Stiegler, 1998: 17). In the Stieglerian sense, the human ‘exteriorisation’ in technical media that are sent into space not only imbues the earth’s exterior with a reflection of the human, but itself reconstitutes the human and reconfigures human ways of life. These technologies thus radically enhance the capacity for species-being, becoming a vital part of our biopolitical capital: while altering our apparently otherwise lifeless planetary exterior into a malleable and thus governable locus of life, their mediatic operations assist humans to overcome their biological and geographical limitations and proceed as a collective towards becoming more-than-human. Our medianature has been continuously adjusting to its extraterrestrial conditions and the acceleration of our technological ‘exteriorisation’ in space has necessitated the development of an attendant governmental framework. The landmark attempt to arrange the increasing multiplicity of human relationships with outer space was to define them through the rule of law – a juridical prefiguration which, as Foucault and Giorgio Agamben (1998) suggest, is a prerequisite for governing life. In 1967, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (United Nations, 2002), or, The Outer Space Treaty (OST) entered into force. In lieu of the pending human landing on the Moon, this international legal agreement established outer space as the shared domain of a global commons, which is to be explored and used by all nation-states, but which itself is to stay outside the vagaries of territorial claims and property rights. A pre-emptive gesture aimed at securing politico-economic codification of the extraterrestrial milieu before human arrival, the OST did not specify where the administrative borders of outer space are – the border between terrestrial and extraterrestrial space has been unofficially assigned to the Ka´rma´n line, a region about 100 km above the planetary surface, where objects sent into space do not fall back but remain in orbit. Nevertheless, the Treaty designates its inhuman expanses as the precinct of human governance, and behind such legal coding stood the same politico-economic rationalities which Foucault identified as pivotal for the institution of the doctrine of the ‘Freedom of the Seas’ as a foundation of international maritime law in the seventeenth century. This legal principle that identified the ocean’s strategic importance as a jointly used resource and set it free from territorial claims, symptomatically announced two interrelated entrances onto the world stage – the rise of global capitalism and the birth of biopolitics, while its replication in the OST marked the next phase in their development. In one of his lectures at the Colle`ge de France, Foucault (2008: 51–73) provided a brief account of how the history of international law echoed the emergence of modern approaches to governance, where the primary emphasis upon territory becomes augmented with the objective to secure the vitality of the shared market. He described how the Treaty of Westphalia’s reinforcement of borders around sovereign states in 1598, which strengthened their inner autonomy yet limited their external reach, instituted each of them as a part of a collective of states gathered around the common interest of progress. This territorial reform aimed to end devastating wars between the states and ensure their political and economic stability, but it imposed the need for new domains of competition in which each of them could independently acquire and prosper, and all them could together be in a ‘state of permanent collective enrichment’ (Foucault, 2008: 55). These spaces, Foucault suggested, were inaugurated with the ‘Freedom of the Seas’ in 1609, which opened the ocean as a space which all states could use to advance through economic competition rather than rivalry over territory. While specifically related to the agenda of European colonial expansions, the establishment of the seas as shared commons was indicative of the awareness that the unlimited accumulation of wealth requires the infinitely free space of the global market. Freedom of the seas was, as Foucault (2008: 56) described, born out of this ‘new form of global rationality... a new calculation on the scale of the world’ and it marked the start of economic globalisation. The interplay between the finite room of territories and infinite possibilities for circulation and accumulation of capital was sustained indefinitely by asserting the global freedom, the commonality of the seas. Through the commons of the seas, capitalism assumed its global latitudes; while the historical enclosure of wastelands that were shared as ‘commons’ enabled the initial, ‘primitive’ accumulation of capital, the creation of the ocean’s commons enabled capitalism to articulate its processes at a global scale. This legal manoeuvre to defend territory by rethinking the spaces of the market institutes the idea of shared commonality as an Archimedean point for the governance of human societies, preparing the terrain for a biopolitical system of governance based upon its abstraction into a method of subsuming ‘life itself’ to the massifying logic of averages and estimates. The institution of the OST and its associated Agreements and Conventions2 from the mid-twentieth century was an outcome of yet another spatial crisis; it was an attempt to negotiate the many tensions that the arrival of the Space Age stirred within global affairs. It was at the time of Cold War and states’ political polarisation, in a world where rapid industrialisation and massive population increases were coupled with anxieties about limits to economic growth, that outer space was identified as a potential site of military conflicts, competing claims of sovereignty and a rapacious race for resources. The looming possibility of still deeper crisis necessitated another repositioning of states and markets around their vital assets, and a restoring of the global equilibrium of powers. Here the OST drew upon the juridical principle of a ‘common heritage’ of humankind – a concept previously employed in the Antarctic Treaty in 1959 for comparable arrangements of international regimes of governance – and took the idea of the commons outside the globe. The treaty expanded the conceptual borders of ‘the scale of the world’ into extraterrestrial space, prescribing that its exploration ‘shall be carried out for the benefit and in the interests of all countries’ and that it ‘shall be the province of all mankind’ (OST, article 1). Once again, international law established a space of commons whose exploration and exploitation would proceed as a joint enterprise through which all states could freely advance and prosper both individually and as a part of collective. Just as the ‘Freedom of the Seas’ opened routes for ships sailing in the name of nations, the OST unlocked flightpaths for spaceships and other technologies, stimulating states’ techno-scientific interests and competition and ensuring that the emerging mode of ‘high-tech’ capitalism had from its beginnings an extra-planetary, infinite prospect. This trans-national legal netting codified an idea of global commonality and framed the inhuman regions of outer space as the ‘province of all mankind’, drawing them into its global system of governance. The OST thus provided the juridical platform from which to articulate a cosmobiopolitical order; it offered a governmental framework for enacting a vision of the human race as a species-power, which will, through the techno-mediated exploration of space, direct its own cosmic progress. Almost a half century after the OST, media technologies remain crucial to the transformation of outer space into a human province. The voracious neoliberal drive of the state-industry nexus that conditions global biopolitics is so dependent upon them, that they become a target of the same systems of governance they catalyse. Their construction, launches and distribution are the subject of careful calculation, meticulous planning and complex logistics, their condition and movements are continuously being monitored, assessed and managed, and this transfer of governmental rationalities from living humans to inanimate objects changes the biopolitical approach to human species-being. If biopower emerged as concerned with bodies of human individuals and populations, and pressing environmental concerns about the ‘global body of the Earth’ augmented its application ‘from human to planetary bodies’ (Bryld and Lykee, 2000: 92–94), then space-based media technologies mark a subsequent phase in the development of its architecture. They trigger the transposition of life management onto the bodies and populations of media technologies and it is this shift which inaugurates the object-centred coordinates of the cosmobiopolitical: the governance of the human without actual humans. The legal basis of cosmobiopolitics, the OST respectively preserves the status of outer space as a globally shared domain and permits its occupation by technical media that are the legal province of particular terrestrial entities, thus accommodating the contradictory tenets of their governance. However, these governmental rationalities are defined by codes of law and ‘the law’ as Foucault (2007: 47) notes ‘works at the level of the imaginary’, and it can only imagine things which can and cannot be done; like the 0s and 1s of digital code, it only prescribes a state of presence or absence of things. It is the very presence of media technologies in outer space (and the absence of humans) which contradictorily makes possible and disturbs the cosmobiopolitical imaginary. Their remote position situates them beyond the reach of juridical rule and the policing-power of states, literally placing them outside of the ‘global grid’ of governance. While they are used as apparatus through which to enable human terrestrial enterprises, these objects themselves carry the essence of terra and of the absent presence of the human beyond the globe. The media technologies in outer space do not only reduce the incompatibility between the human and the extraterrestrial, but also introduce frictions within their exchanges. This disturbance suggests that their material realities disrupt the imaginaries implied by law and instead assert their own force, reinforcing these objects somewhat absurdly as the non-governable markers of extraterritoriality in the commons, as the non-human emissaries of humanity, and as a non-living population of objects which are managed as if they were alive. In outer space, the matter of media itself becomes code through which to define what can be propertied and what remains commons, what can be governed and what poses itself as ungovernable, where the human ends and the non-human begins, where the boundaries that distinguish governance of the living from the non-living lie and when biopolitics transmutes into a cosmobiopolitics. The media apparatus that support the metamorphosis of biopolitics in outer space are varied, and the milieus in which they function require a range of different performances. The following sections of this paper consider a number of the varying ways specific media technologies perform this extra-planetary extension of the impulse to govern life by focusing on satellites and their debris, and on the prospects of an interplanetary Internet. None of these specimens provides a complete picture of the ways in which media technologies inspire the advent of a cosmobiopolitics. Rather, each offers a different angle from which to consider the shifts in material and social arrangements that are demanded by forays beyond the earth, signs that herald a radical shift in the way humanity conceives of life and articulates its governance. What follows is a series of initial steps, the first paces in a far larger survey that aims to chart the natality of the emergent cosmic traits of biopolitics. I offer here a series of sketches, an outline of tentative trajectories suggested by contemporary mediatic excursions into outer space. By exploring how we manage an over-population of functional and defunct media objects in orbital space and imagine the utilities of interplanetary Internet networks, I suggest that human extraterrestrial medianatures necessitates a profound alteration in our relationship with the technologies, and the reframing of governmental obsessions with discourses of territory, security, and population.

#### The Affirmative obfuscates the intricate connection between the “Public” sector and “Militarism” – the Aff is merely a smokescreen to hide military development of outer space in new forms.

Sheehan 7, Michael. The international politics of space. Routledge, 2007. (Nancy and Peter Meinig Family Investigator in the Life Sciences, Assistant Professor)//Elmer

The 1958 Space Act declared that the United States was keen to explore space for ‘peaceful purposes for the benefit of mankind’, and allowed for ‘cooperation by the United States with other nations and groups of nations’.30 This declaration had a dual purpose. The first statement was designed to deflect attention away from the military dimension of US space research and reduce foreign concerns that the United States was seeking to militarize outer space. The second statement’s purpose was to promote the image of the United States as a scientific leader that was willing to share the development of space with other nations, and which therefore clearly had no hidden agenda beyond space exploration for the general benefit of humanity. In this regard, it fitted in with other US policy initiatives designed to promote the image of the United States as a country eager to cooperate internationally in an open and transparent manner. The Marshall Plan, Atoms-for-Peace and the Peace Corps were all part of this general image-building approach, though all had other motivations as well, as did the space policy. The apparent separation of civilian and military activities allowed the United States considerable flexibility. By having a largely transparent civilian-dominated programme, American public insecurity was alleviated, yet at the same time the US was able to continue its military programmes away from the glare of national and international scrutiny, and often successfully camouflaged behind actual or fictitious civilian space projects. In fact, unknown to the American public, there were three, not two space programmes, white, blue and black. The white programme was the high profile civilian programme led by NASA. The blue programme was the classified military programme run by the Department of Defense. In addition, there was the ‘black programme’, the reconnaissance programme run by the intelligence agencies. The apparent separation of the elements of the US space programme made it easier for the vast majority of the American political establishment to rally behind a substantial and energetic space programme. Liberals could support it as an alternative form of competition with the Soviet Union in an era when the dangers of nuclear war were very real, while conservatives saw the programme as developing military hardware and providing capabilities that would in the long run enhance the effectiveness of US armed forces.31

#### The desire to manage Debris to protect Satellites is a form of cosmo-biopolitical control which determines the productive capacity of objects and people in terms of risk analysis.

Damjanov 15, Katarina. "The matter of media in outer space: Technologies of cosmobiopolitics." Environment and Planning D: Society and Space 33.5 (2015): 889-906. (Faculty of Arts, University of Western Australia)//Elmer

Satellite control is guided by the perspective of Space Situational Awareness (SSA), which, although central to orbital logistics, is thus far without an official definition (Kaiser, 2014). In essence, SSA is concerned not only with observation and surveillance of satellites as a way of knowing details of their orbital position, but also with collecting, aggregating and analysing a wide range of types of data about all objects and events in orbital space as a reference point from which to estimate the best courses in their management. One of the many descriptions of the SSA postulates it as the pursuit of ‘a comprehensive knowledge of the population of space objects, of the space environment, and of the existing risks and threats’ (European Security and Defence Assembly, 2009). While suggestive of the biopolitical agenda of securing human activities in the orbital milieu, this formulation symptomatically reveals a turn towards object-oriented governance: SSA focuses upon the ‘population of space objects’. On one hand, the term ‘space object’ is a legal classification of all human-made items placed in outer space, a nomenclature introduced by the OST and elaborated in the Liability Convention from 1972, which gives their legal owners exclusive rights to control and interfere with them. On the other, the phrase ‘population of space objects’ – an expression which is customarily used in expert vocabulary surrounding SSA5 – signposts a repositioning of the human-centred en masse purview of biopolitics to incorporate a population of technologies. The biopolitical use of the term ‘population’ originally specifies a mass of living humans; however, with its application to the assemblage of human-made satellites, biopolitics in outer space becomes central to attempts to manage a population whose bodies are neither human, not animate, but that of technology. This twofold satellite logistics which focuses upon both singular ‘space objects’ and a collective ‘space population’ to assess multiple variables that determine their productive capacity and manage risks associated with their occupation of orbital space, reinforces regimes of satellite management which operate parallel to that of humans. At both its administrative and executive levels, the governance of satellites regulates their material presence in space, managing their distribution, traffic, operations and decommission. Satellite launches require technical and procedural compliance with national and international protocols. Information about each satellite is stored in the United Nations Register of Space Objects Launched into Outer Space that functions as an inventory of their births and deaths, and while apparently excluding undisclosed missions,6 acts as an (always incomplete) global census on satellite population. Activities of satellites are continuously examined, evaluated and upheld via a multifaceted management system termed Tracking, Telemetry and Control (TT&C). TT&C enables ground control centres to monitor satellites via sensors and on-board computers with which they are equipped, telemetrically measure their ‘health’ by determining the ‘condition and performance of various subsystems such as fuel status, attitude and output of solar panels’, and adjust their trajectories, configurations and functions (U.S. Army Space Division, n.d.). Within satellite logistics, authority over each satellite is restricted to its owners and allows for its individual proprietary control, but the overall population of satellites is seen as a shared matter of global security, which necessitates cooperative collection and exchange of data between space agencies, commercial and space experts and enthusiasts. There is a range of satellite tracking software and databases, some with restricted access such as the US Space Surveillance Network that only provides data to subscribed governmental and commercial parties, and others which are freely available online such as the UCS Satellite Database or the website Heaven Above that enable the public to monitor the movement of satellites. Taken together, these examples of logistical inscription and calculated management suggest attempts to institute a global system of networked satellite control which corresponds with the twin-poled organisation of power over life. It simultaneously centres on an individual satellite (aiming to diagnose and restore its health and discipline its conduct in order to maximise its productivity) and their entire population (overseeing its demographic distribution and circulation and seeking to uphold its ‘public health’).7 However, like the volatile lives of humans, the orbital life of satellites to some extent eludes its logistical control; as Foucault (1990: 143) reminds us, ‘it is not that life has been totally integrated into techniques that govern and administer it; it constantly escapes them’. Aside from the stealth or spy satellites constructed to avoid detection by any party external to their missions and the general techno-scientific limitations of satellite control, a satellite’s life in orbit could take many unexpected turns which rupture the effective performance of its control grids. For example, the Eutelsat W2M unexpectedly fell from its orbital pathway (Selding, 2009), the unforeseen collision between US Iridium 33 and the inactive Russian Kosmos 2251 satellite demolished them both (Iannotta and Malik, 2009), and an Indonesian satellite was damaged ‘by urine and faecal matter’ left in orbit by manned space missions (China Daily, 2006). Due to human error or factors beyond human control, a satellite occasionally crashes with another object in orbit, sometimes it falls back to Earth, its body suffers material damage and its vital functions fail, the service that it provides is terminated and its ‘death’ takes the hands-on approach of satellite logistics out of hand. Orbital debris or space waste (Figure 1) presents a particular encumbrance for the efficiency of satellite logistics: millions of pieces of obsolete satellites silently swirl around the planet at ultra-high velocities and are to stay in orbit for years, centuries and even millennia, posing a constant collision hazard for active spacecraft and constraining their future launches. Space waste is subject to the same logistic networks of surveillance and database governance as the active satellites, but while its ‘Tracking’ is possible to a very limited extent,8 its management does not involve ‘Telemetry’ and certainly not ‘Control’. The unruly blanket of satellite debris participates in satellite circulation as a bad element, ‘a living dead’ formation that is impossible to command – material evidence of the effective loss of authority and control in orbital space. The fragmented bodies of defunct satellites introduce a disorder into satellite logistics, and they are literary ‘non-governable’ objects which, as Ned Rossiter describes in his discussion of the management of electronic waste, ‘hold a range of implications for biopolitical technologies of control’ (Rossiter, 2009: 37). They suggest, in this instance, that cosmobiopolitical modes of governance also need to incorporate the risk produced by the afterlife of space objects as a way of compensating for deterioration of its aptitude to enforce sovereignty rights and property management over their ‘unruly’ conduct. The proliferation of spent satellite hardware destabilises the security of the global circulation of information and knowledge. The movement of each satellite entails a constant risk from damage that would transform it into uncontrollable ‘living dead’ matter with the potential to subsequently contaminate others and corrupt their signal transmissions. Foucault’s research into ways in which historical approaches to epidemics reflect the methodological shifts in exercising power over life, evolving from the sovereignty model of the exclusion of the contagious, via disciplinary prescription of normative procedures surrounding the diseased, to biopolitical strategies of prevention and prediction of outbreaks. In contemporary culture, metaphors of epidemics and contagion have been extended from their originally biological context to the circulation of ‘immaterial’ digital content such as computer worms, viruses and spam (Parikka, 2005, 2007a, 2007b; Sampson, 2011; Thacker, 2005a). With space debris, such metaphors extend to the technological hardware which sustains information networks and ultimately global systems of biopolitical control. The application of information technologies to evaluate the ‘public health’ of satellites mirrors the practice of biosurveillance that monitors the risks of epidemics among living biota and in this sense, their logistics can be seen as a strategy of preventive biodefense. The official guidelines that cover the construction, management and disposal of satellites provide instructions about developing them from materials that would enable greater control over their bodies, even when they cease to operate (United Nations, 2010; US Government, 1997). Here endeavours to command the matter and ways of life through the application of advanced technologies are imposed upon the bodies and population of satellites. The efforts to improve the vitality of satellites’ physiques and breed them into a healthy, resistant population, transfer the risk-combating strategies of satellite logistics from discipline and surveillance to deep ecologies of bioengineering. The materiality of satellites triggers a biopolitical response, a human attempt to mitigate the contagion risk by attempting to govern these inanimate objects as if they were living. The mass of functional and defunct satellites that swarm around the globe has become an inseparable part of its environs, which reconfigures the circumstances of human medianatures. Each of their atoms is now a constituent element of orbital space and as such they themselves become a common that is shared by all. This is a common created by humans at the level of species – material evidence that the impact of human technoindustrial activities which have pushed the planet into a new geological period, the Anthropocene, is already overspilling the globe. Satellite populations facilitate new paths for the biopolitical production of the commons, revealing the material aspect of information and communication technologies as vital to the creation of human collectivities. Thacker (2005b) suggests that, in the age in which informatics becomes central for securing life and its processes, ‘perhaps we can rephrase Foucault’s formulation of biopolitics, and suggest that biopolitics is the condition in which population, information, and security become intertwined in a set of practices, responses, and preparations’. In the context of the satellites that inhabit the orbital commons, this rephrasing should also include the impact that the matter of technology has upon the global focus and practices of biopolitics. In this sense, the human relationship with satellites signposts a possible transformation of biopower as power concerned only with the mere survival of the human element of ‘bare life’ (Agamben, 1998) towards a more technical and perhaps networked definition of life, which encompasses both humans and objects involved in mediation practices and whose governance incorporates their living and living-like populations.

#### The Impact is unending war and environmental catastrophe.

Craven 19 [Matt Craven (Professor of International Law, SOAS University of London, United Kingdom). “‘Other Spaces’: Constructing the Legal Architecture of a Cold War Commons and the Scientific-Technical Imaginary of Outer Space”. European Journal of International Law, Volume 30, Issue 2, May 2019, Pages 547–572, Accessed 1/12/22. <https://academic.oup.com/ejil/article/30/2/547/5536739> //Xu]

Even in the aftermath of the pronounced ‘closure’ of the Cold War, the residue of the formation that was brought into play in space remains very much with us today. On the one hand, outer space has been progressively enveloped within the technological infrastructure of warfare and policing actions – the first Gulf War of 1990 ushering in a new era of ‘smart’ weaponry and GPS-configured surgical violence139 – anticipating, in the process, the ‘remote’ operations of the drone and cyber warfare of the contemporary era. The blurring of the demarcation between the (outer space) technologies of war and peace finds its contemporary parallels in the collapse of a range of other operative distinctions – between the virtual and the real, the combatant and the civilian, the battlefield and the battle space, the interstate and the intra-state. The juridical formations on which these depend, furthermore, have themselves become enveloped within the same strategic operations – ‘lawfare’ becoming the adjunct to a new form of totalized warfare stripped of any spatial determinacy. On the other side, outer space has increasingly become the terrain of speculative capitalism, which, following the growth of space tourism (pioneered by the Russian space administration in the 1990s140), has seen the active development of a range of commercial projects from the construction of sub-orbital ‘space planes’ to asteroid and lunar mining undertaken by both public and private agencies. The imaginative resources for such projects have come from various directions, but a common theme is that impending resource depletion on earth will soon bring such resources within commercial and technological reach, and that outer space will therefore provide a ‘spatial fix’ for a system of global capitalism that might otherwise run into the ground.141 There is, as Katarina Damjanov has noted,142 a deep parallelism here between the juridical opening of the seas (mare liberum), which served to stabilize the system of sovereignty within Europe in the 17th century by extroverting the site of conflict and competition,143 and the opening of outer space three centuries later as another prophylactic measure, even if, in this case, that which was to be guarded against was a planetary-wide, environmental catastrophe. Perhaps the deepest irony, here, is that the mode of salvation on offer is precisely the same as that which is the extant cause of crisis, which one may take to be a remorseless instrumentalization of nature.

#### The alternative is *Worldism* – the refusal of international relations and specialization as dictated by militarism in favor of epistemological interventions into the exercise of Space as a carceral apparatus.

Agathangelou and Ling 09 Anna M. Agathangelou is an Associate Professor in the Departments of Political Science and Women’s Studies at York University, Canada and co-director of the Global Change Institute, Nicosia, Cyprus, L.H.M. Ling is an Associate Professor in the Graduate Program in Inter- national Affairs at The New School, New York, USA., Transforming World Politics: From empire to multiple worlds, The New International Relations Series, 2009.

MAIN ASPECTS Worldism presents world politics as a site of multiple worlds. These refer to the various and contending ways of being, knowing, and relating that have been passed onto us from previous generations. Histories, languages, myths, and memories institutionalize and embody multiple worlds through simple daily acts like cooking and eating, singing and dancing, joking and playing but also through larger events like trade, development, conflict, and war. Worldism registers not only the “difference” that comes from multiple worlds (see Inayatullah and Blaney 2004) but also their entwinements. Selves and others reverberate,2 producing multi- and trans-subjectivities that leave us legacies of reinforcement and conflict, reconstruction and critique, reconciliation and resistance. Such syncretic engagements belie seeming oppositions and contradictions among multiple worlds to reveal their underlying connections despite hegemony’s violent erasures. On this basis, communities have opportunities to heal and recuperate so they can build for another day, for another generation. Worldism as everyday life enacts self–other reverberations and syncretic engagements, especially by communities at the margins. Worldism as an analytical framework theorizes about them. Both types of worldist activity expose the problematic of empire in practice and logics. Building on the postcolonial notion that all parties make history, albeit with unequal access to power, worldism leads to an undeniable conclusion: our mutual embeddedness makes us mutually accountable. One cannot escape from the other. Mutual accountability brings with it duties and responsibilities, to be sure, but also possibilities: that is, (a) an internal dialectic of constant questioning to check and problematize hegemony, so that (b) we can expand our visions, strategies, and approaches beyond the narrow, hegemonic confines of realism/liberal internationalism, in order to (c) arrive at a more inclusive, conciliatory, and democratic world politics. In brief, worldism consists of two simultaneous processes: descriptive and analytical. Worldism-as-description features the following: (a) multi- and trans-subjectivities that institutionalize the social and structural reverberations between selves and others; (b) the agency of all parties, despite inequities and injustices, to create, build, and articulate multiple worlds; (c) syncretic engagements that consolidate the entwinements of multiple worlds into concrete strategies for change, adjustment, adaptation, refor- mulation, and transformation; and (d) community-building that integrates and accretes these syncretic engagements despite denials of such efforts from hegemonic elites and their ideologies. Worldism-as-analysis draws on the struggles and learning undertaken in worldist daily life to emphasize: (a) accountability as a hallmark of worldist inquiry that ensures (b) an internal criticality to question, contest, and challenge hegemony, so that we may (c) arrive at emancipatory construction even as we critique and resist. The critical reader may interject: Couldn’t “agency” and “accountabil- ity” in worldism be taken as a fancy way of blaming the victim? Are Jews, for example, responsible for the Holocaust; slaves for their enslavement; or any oppressed people for their oppression? Worldism as a politics of multiple relations subsumes this liberal, individualist understanding of responsibility. Multiple relations produce a web of effects and consequences to any kind of decisions and/or set of practices. Accountability in worldism asks: Who’s involved, under what conditions, and through which processes can we redress or transform the violence? What kinds of understanding are generated to account for these relations and/or to make them invisible? Without the painful concession that all of us, “abusers,” “victims,” and “innocent bystanders” alike, contribute to the production of hegemonic violence, whether it results in domestic abuse (see Adler and Ling 1995) or state violence (see Ling 1994), we may never realize how violence is conceived, generated, and sustained. By extension, we will never understand ways to end it. Instead, in our injuries and (self ) alienation, we may reproduce time and again the same conditions of violence or hegemony that afflicted us in the past and which seems the only option for the present. Suspended political ideals, in this case, could also block us from action and change. Worldist agency and accountability compel us to face the complicities (including our own) that sustain violence in the making of history, so that we may, as Marx exhorted, change it. Where do these ideas come from?, our reader may ask. Let us delineate the intellectual precedents to worldism. INTELLECTUAL PRECEDENTS Worldism draws on constructivism and postmodernism but also differs from them. Worldism shares with constructivism its emphasis on intersubject- ivity, and with postmodernism its insights on asymmetrical difference: that is, the norms, institutions, practices, and behaviors that set up certain subjects and subjectivities as more privileged and protected than others. Power, then, cannot be reduced to an objectified, reified condition of who’s “on top” or who “has more” but instead results from agents contributing to macro-political structures like ideology, organization, and capitalist relations. Power redefined in these terms stems from an intersubjective consensus within a context of material conditions and relations. The crux here lies in the framing. Since narration as a process is never complete, the story can always change.3 However, worldism departs from constructivism by asking: What kinds of intersubjectivity are constructed, by whom, and for what purpose, and how do theories of subjectivity restructure the world “otherwise”? And is this how we want the world to be? Not probing into the social relations of intersubjectivity, according to worldism, effectively erases the power politics of meaning, including the political economy behind such constructions. And unlike postmodernism, worldism distinguishes power from the resistance it induces. Contra Foucault (1994), we differentiate between the colonizer and colonized in their experiences of colonial power (see Stoler 2002) and the entwinements that follow, both reinforcing and conflicting complicity (see Ling 2002b). Not doing so implicitly reinforces the imperialist assertion that “this is the way the world is”: that is, it is not open to alternative concepts, discourses, strategies, or ways of being. These gaps in constructivism and postmodernism return us to the conventional treatment of power as domination, pure and simple. Ronen Palan (2000), for instance, finds a strain of conservative realism in Alexander Wendt’s “naturalist” version of constructivism, primarily because he claims to offer a method only, and not an interpretation, of politics. Wendt (2005) himself admits as much. For similar reasons, Samir Amin (2004) calls postmodernism an “ideological accessory” to elite, bourgeois interests just as Aijaz Ahmad (1992) considers post-structuralist theories serve as alibis for imperialism. Both post- modernism and poststructuralism value critique and deconstruction over political action, thereby keeping de facto power intact. We note that although critical theories like postmodernism and con- structivism open up spaces to think about shifting power politics, they fall short of transforming the very asymmetries they critique. Inattention to structural, material interest and lack of integrating the Other analytically – that is, as a substantive maker of the world – undermines their claims of emancipatory social theory. Ultimately, the Other becomes a repository of raw materials for hegemonic actors and sites in the North to process. Worldism acknowledges a deep intellectual debt to postcolonial studies. Here, race, gender, sexuality, class, and nationality serve as analytics and substance in examinations of power relations. Postcolonial studies demystify empire’s boast, like Kipling’s “White Man’s Burden,” that the imperial Self makes the world for all Others. And that world is unidimensional (top- down state power), unilateral (center dominates periphery), and unilinear (past–present–future). Postcolonial studies record a more nuanced and multiple history by problematizing the ways colonial power is imposed on the colonized. That is, colonization involves more than a unilateral and mechanical domination of the subjugated by colonizers and their states. As documented by postcolonial studies, tensions and contradictions emerge from these relations (Said 1979; Spivak 1999), leading to adaptations and integrations between hegemonic selves and subaltern others. From this inter- action, “colonizers” and “colonized” produced something together over the course of time that neither anticipated nor perhaps desired but which all learned to live with, and eventually called their own. Divides along lines of property, race, class, language, religion, and ideology did not disappear. They fused, rather, into hybrid, creole, or mélange cultures that, nonethe- less, contested these categories constantly (Ashcroft, Griffiths, and Tiffin 1995; Lewis and Mills 2003). In recognizing that colonizer and colonized mutually construct their sub- jectivities, postcolonial studies attribute to both the legacies of power that we face today. Note, for example, Britain’s principal instrument of colonial and imperial power: the East India Company. Sudipta Sen (1998) shows that, contrary to claims that the British brought capitalism to India, the East India Company had to adjust to pre-existing market structures and political relations to gain access to the thriving trade already in place in northern India.4 Only through this kind of entry could the East India Company later redirect the trade to its favor. L.H.M. Ling (2002b) traces how institutional elites in East Asia learned syncretically and “interstitially” between two world orders – the agrarian-based, cosmo-moral universe of Confucian governance and the Westphalian inter-state system of commerce and trade – to cumulate into what we know as Asian capitalism today. Walter Mignolo (2000) highlights the “gnosis” of thought and action, Self and Other, that comes from centuries of transgressing and reformulating the colonial boundaries that comprise Latin America. Of course, those subjected to hegemony must accommodate others more than those who perpetrate it. Yet hegemony’s very asymmetry highlights the resilience and creativity of the marginalized. Ordinary people can journey across subjectivities to engage syncretically with others, even under conditions of poverty and inequality, to rebuild, reconstruct, and reorganize communities. Cherrie Moraga and Gloria Anzaldua (1983) characterize their straddling of multiple worlds as life on the “borderlands.” Typically, they point out, women of color from the South must bear the biggest burden of negotiating the multiple worlds of language, culture, class, and gender to survive white- majority society in the North despite systemic discrimination and obstacles. Still, they are able to exercise internal reserves of freedom, thought, and action to sort through hegemony, not simply surrender to it. Similarly, the indigenous populations of the Americas, Australia, and New Zealand have entered into treaties with their white majorities to retain aspects of indigenous ontologies by formalizing them in Western institutions (Shilliam 2008).

#### AT Lake – We are a link to the plan you should be forced to defend the arguments that you chose to introduce which is the most predictable and solves

## Case

### 1NC---AT: Collisions

#### Squo debris thumps

**Wall 21** [Mike Wall, Michael Wall is a Senior Space Writer with [Space.com](http://space.com/) and joined the team in 2010. He primarily covers exoplanets, spaceflight and military space. He has a Ph.D. in evolutionary biology from the University of Sydney, Australia, a bachelor's degree from the University of Arizona, and a graduate certificate in science writing from the University of California, Santa Cruz. 11/15/21, "Kessler Syndrome and the space debris problem," Space, [https://www.space.com/kessler-syndrome-space-debris accessed 12/10/21](https://www.space.com/kessler-syndrome-space-debris%20accessed%2012/10/21)] Adam

Earth orbit is getting more and more crowded as the years go by. Humanity has launched about 12,170 satellites since the dawn of the space age in 1957, [according to the European Space Agency](https://www.esa.int/Safety_Security/Space_Debris/Space_debris_by_the_numbers) (ESA), and 7,630 of them remain in orbit today — but only about 4,700 are still operational. That means there are nearly 3,000 defunct spacecraft zooming around Earth at tremendous speeds, along with other big, dangerous pieces of debris like upper-stage rocket bodies. For example, orbital velocity at 250 miles (400 kilometers) up, the altitude at which the ISS flies, is about 17,100 mph (27,500 kph). At such speeds, even a tiny shard of debris can do serious damage to a spacecraft — and there are huge numbers of such fragmentary bullets zipping around our planet. ESA estimates that Earth orbit harbors at least 36,500 debris objects that are more than 4 inches (10 centimeters) wide, 1 million between 0.4 inches and 4 inches (1 to 10 cm) across, and a staggering 330 million that are smaller than 0.4 inches (1 cm) but bigger than 0.04 inches (1 millimeter). These objects pose more than just a hypothetical threat. From 1999 to May 2021, for example, the ISS conducted 29 debris-avoiding maneuvers, including three in 2020 alone, [according to NASA officials](https://www.nasa.gov/mission_pages/station/news/orbital_debris.html). And that number continues to grow; the station performed [another such move in November 2021](https://www.space.com/space-station-dodging-chinese-space-junk-spacex-crew-3), for example. Many of the smaller pieces of space junk were spawned by the explosion of spent rocket bodies in orbit, but others were more actively emplaced. In January 2007, for instance, China intentionally destroyed one of its defunct weather satellites in a much-criticized test of anti-satellite technology that generated [more than 3,000 tracked debris objects](https://swfound.org/media/9550/chinese_asat_fact_sheet_updated_2012.pdf) and perhaps 32,000 others too small to be detected. The vast majority of that junk remains in orbit today, experts say. Spacecraft have also collided with each other on orbit. The most famous such incident occurred in February 2009, when Russia's defunct Kosmos 2251 satellite slammed into the operational communications craft Iridium 33, producing [nearly 2,000 pieces of debris](https://swfound.org/media/6575/swf_iridium_cosmos_collision_fact_sheet_updated_2012.pdf) bigger than a softball. That 2009 smashup might be evidence that the Kessler Syndrome is already upon us, though a cataclysm of "Gravity" proportions is still a long way off. "The cascade process can be more accurately thought of as continuous and as already started, where each collision or explosion in orbit slowly results in an increase in the frequency of future collisions," [Kessler told Space Safety Magazine in 2012](http://www.spacesafetymagazine.com/space-debris/kessler-syndrome/don-kessler-envisat-kessler-syndrome/).

#### Collision risk is infinitesimally small

Fange 17 Daniel Von Fange 17, Web Application Engineer, Founder and Owner of LeanCoder, Full Stack, Polyglot Web Developer, “Kessler Syndrome is Over Hyped”, 5/21/2017, http://braino.org/essays/kessler\_syndrome\_is\_over\_hyped/

The orbital area around earth can be broken down into four regions. Low LEO - Up to about 400km. Things that orbit here burn up in the earth’s atmosphere quickly - between a few months to two years. The space station operates at the high end of this range. It loses about a kilometer of altitude a month and if not pushed higher every few months, would soon burn up. For all practical purposes, Low LEO doesn’t matter for Kessler Syndrome. If Low LEO was ever full of space junk, we’d just wait a year and a half, and the problem would be over. High LEO - 400km to 2000km. This where most heavy satellites and most space junk orbits. The air is thin enough here that satellites only go down slowly, and they have a much farther distance to fall. It can take 50 years for stuff here to get down. This is where Kessler Syndrome could be an issue. Mid Orbit - GPS satellites and other navigation satellites travel here in lonely, long lives. The volume of space is so huge, and the number of satellites so few, that we don’t need to worry about Kessler here. GEO - If you put a satellite far enough out from earth, the speed that the satellite travels around the earth will match the speed of the surface of the earth rotating under it. From the ground, the satellite will appear to hang motionless. Usually the geostationary orbit is used by big weather satellites and big TV broadcasting satellites. (This apparent motionlessness is why satellite TV dishes can be mounted pointing in a fixed direction. You can find approximate south just by looking around at the dishes in your northern hemisphere neighborhood.) For Kessler purposes, GEO orbit is roughly a ring 384,400 km around. However, all the satellites here are moving the same direction at the same speed - debris doesn’t get free velocity from the speed of the satellites. Also, it’s quite expensive to get a satellite here, and so there aren’t many, only about one satellite per 1000km of the ring. Kessler is not a problem here. How bad could Kessler Syndrome in High LEO be? Let’s imagine a worst case scenario. An evil alien intelligence chops up everything in High LEO, turning it into 1cm cubes of death orbiting at 1000km, spread as evenly across the surface of this sphere as orbital mechanics would allow. Is humanity cut off from space? I’m guessing the world has launched about 10,000 tons of satellites total. For guessing purposes, I’ll assume 2,500 tons of satellites and junk currently in High LEO. If satellites are made of aluminum, with a density of 2.70 g/cm3, then that’s 839,985,870 1cm cubes. A sphere for an orbit of 1,000km has a surface area of 682,752,000 square KM. So there would be one cube of junk per .81 square KM. If a rocket traveled through that, its odds of hitting that cube are tiny - less than 1 in 10,000.

#### Debris creates deterrence by raising the bar for conflict

Miller 7/31 [(Gregory, Chair of the Department of Space Power at the Air Command and Staff College, Ph.D. in Political Science from The Ohio State University) “Deterrence by Debris: The Downside to Cleaning up Space,” Space Policy, 7/31/2021] JL

The danger of kinetic strikes increasing orbital debris is a common theme in the literature, but the positive deterrent effects of some debris are often overlooked. The debris resulting from destroyed satellites, or other space objects, creates a deterrent effect on actors who might otherwise violate international norms and strike at objects in space, either to test their capabilities or as an act of hostilities. This is not deterrence in the traditional sense, of one actor publicly threatening punishment in response to another actor’s unwanted actions. It is not deterrence by denial since the attacker is not damaged and may even achieve its objective. Nor is it deterrence by punishment because the debris itself does not threaten to punish the attacker’s country. But debris can increase the future costs to the aggressor, even if their initial attack succeeds, and thus it has a similar restraining effect on certain behavior. Like the automated response of the U.S. tripwire in West Germany, the threat that debris can pose to state interests acts as a form of deterrence, at least to prevent some actors from taking certain types of actions. Removing the danger of debris will weaken that restraint and thus weaken deterrence, making ASAT tests and hostile actions in space more likely.

Several factors may deter a state from launching kinetic tests or striking against an adversary’s interests in space. For one thing, if a state’s adversary has similar capabilities to destroy objects in space, deterrence would be a function of not wanting to escalate tensions. Although international law only explicitly prohibits states from placing weapons of mass destruction in orbit, international space law, like the Outer Space Treaty [30], does provide a framework for addressing the activities of one state that lead to the damage of another state’s property. Likewise, there are international norms (informal but expected rules of behavior) against the weaponization of space. But these norms seem to be in decline [31], and such norms only deter a state from engaging in certain types of behavior if the state cares about following norms, if it cares about how states perceive its behavior, or if it believes other states are willing to enforce the norms. The beauty of debris as a deterrent is that it does not rely on the enforcement of norms or the credibility of states to succeed.

#### Early warning’s in GEO – debris doesn’t matter there

Von Fange 17 [Daniel Von Fange is a full stack developer that builds web platforms and engineer, with a particular interest in space applications. Kessler Syndrome is Over Hyped. May 21, 2017. braino.org/essays/kessler\_syndrome\_is\_over\_hyped/]

GEO - If you put a satellite far enough out from earth, the speed that the satellite travels around the earth will match the speed of the surface of the earth rotating under it. From the ground, the satellite will appear to hang motionless. Usually the geostationary orbit is used by big weather satellites and big TV broadcasting satellites. (This apparent motionlessness is why satellite TV dishes can be mounted pointing in a fixed direction. You can find approximate south just by looking around at the dishes in your northern hemisphere neighborhood.) For Kessler purposes, GEO orbit is roughly a ring 384,400 km around. However, all the satellites here are moving the same direction at the same speed - debris doesn’t get free velocity from the speed of the satellites. Also, it’s quite expensive to get a satellite here, and so there aren’t many, only about one satellite per 1000km of the ring. Kessler is not a problem here.

#### No Escalation

#### 1] Military Precedent

Zarybnisky 18, Eric J. Celestial Deterrence: Deterring Aggression in the Global Commons of Space. Naval War College Newport United States, 2018. (Senior Materiel Leader at United States Air Force)//Elmer

PREVENTING AGGRESSION IN SPACE While deterrence and the Cold War are strongly linked in the public’s mind through the nuclear standoff between the United States and the Soviet Union, the fundamentals of deterrence date back millennia and deterrence remains relevant. Thucydides alludes to the concept of deterrence in his telling of the Peloponnesian War when he describes rivals seeking advantages, such as recruiting allies, to dissuade an adversary from starting or expanding a conflict.6F 6 Aggression in space was successfully avoided during the Cold War because both sides viewed an attack on military satellites as highly escalatory, and such an action would likely result in general nuclear war.7F 7 In today’s more nuanced world, attacking satellites, including military satellites, does not necessarily result in nuclear war. For instance, foreign countries have used highpowered lasers against American intelligence-gathering satellites8F 8 and the United States has been reluctant to respond, let alone retaliate with nuclear weapons. This shift in policy is a result of the broader use of gray zone operations, to which countries struggle to respond while limiting escalation. Beginning with the fundamentals of deterrence illuminates how it applies to prevention of aggression in space.

#### 2] Deterrence

**Pavur and Martinovic 19** [James Pavur and Ivan Martinovic, May 2019, "The Cyber-ASAT: On the Impact of Cyber Weapons in Outer Space," ResearchGate, 11th International Conference on Cyber Conflict: Silent Battle [https://www.researchgate.net/publication/334422193\_The\_Cyber-ASAT\_On\_the\_Impact\_of\_Cyber\_Weapons\_in\_Outer\_Space accessed 12/10/21](https://www.researchgate.net/publication/334422193_The_Cyber-ASAT_On_the_Impact_of_Cyber_Weapons_in_Outer_Space%20accessed%2012/10/21)]Adam

A. Limited Accessibility

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

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

B. Attributable Norms

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

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

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

C. Environmental Interdependence

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

#### No Terminal impact to cyber – 1AC Falco just says they occasionally get hacked but have no reason that escalates or what that looks like

#### Megaconstellations solves satellite hacking – multiple warrants. Commercial Satellites are key due to production capacity.

Hallex and Cottom 20 Hallex, Matthew, and Travis Cottom. "Proliferated commercial satellite constellations: Implications for national security." Joint Forces Quarterly 97.July (2020): 20-29. (Matthew A. Hallex is a Research Staff Member at the Institute for Defense Analyses. Travis S. Cottom is a Research Associate at the Institute for Defense Analyses.)//Re-cut by Elmer

While potentially threatening the sustainability of safe orbital operations, new proliferated constellations also offer opportunities for the United States to increase the resilience of its national security space architectures. Increasing the resilience of U.S. national security space architectures has strategic implications beyond the space domain. Adversaries such as China and Russia see U.S. dependence on space as a key vulnerability to exploit during a conflict. Resilient, proliferated satellite constellations support deterrence by denying adversaries the space superiority they believe is necessary to initiate and win a war against the United States.28 Should deterrence fail, these constellations could provide assured space support to U.S. forces in the face of adversary counterspace threats while imposing costs on competitors by rendering their investments in counterspace systems irrelevant. Proliferated constellations can support these goals in four main ways. First, the extreme degree of disaggregation inherent in government and commercial proliferated constellations could make them more resilient to attacks by many adversary counterspace systems. A constellation composed of hundreds or thousands of satellites could withstand losing a relatively large number of them before losing significant capability. Conducting such an attack with kinetic antisatellite weapons—like those China and Russia are developing—would require hundreds of costly weapons to destroy satellites that would be relatively inexpensive to replace. Second, proliferated constellations would be more resilient to adversary electronic warfare. Satellites in LEO can emit signals 1,280 times more powerful than signals from satellites in GEO.29 They also are faster in the sky than satellites in more distant orbits, which, combined with the planned use of small spot beams for communications proliferated constellations, would shrink the geographic area in which an adversary ground-based jammer could effectively operate, making jammers less effective and easier to geolocate and eliminate.30 Third, even if the United States chooses not to deploy national security proliferated constellations during peacetime, industrial capacity for mass-producing proliferated constellation satellites could be repurposed during a conflict. Just as Ford production lines shifted from automobiles to tanks and aircraft during World War II, one can easily imagine commercial satellite factories building military reconnaissance or communications satellites during a conflict. Fourth, deploying and maintaining constellations of hundreds or thousands of satellites will drive the development of low-cost launches to a much higher rate than is available today. Inexpensive, high-cadence space launch could provide a commercial solution to operationally responsive launch needs of the U.S. Government. In a future where space launches occur weekly or less, the launch capacity needed to augment national security space systems during a crisis or to replace systems lost during a conflict in space would be readily available.31

### 1NC---AT: Astronomy

#### Tons of countermeasures prevent collisions

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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.

#### No extinction---at worst 10% dies

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According to the US National Academy of Sciences, as a rule of thumb, Near Earth Object (NEO) impacts with a diameter of 1.5km would likely kill 10% of the world population, and the damage ramps up to the entire population for those with a diameter of 10km.49 Due to the success of NEO tracking efforts, we can have relatively high confidence in the probability estimates of NEO strikes.50 On average, 5km NEOs are expected to strike once every 30 million years, and 10km NEOs once every 100 million years.51 We have discovered around 94% of nearby asteroids with a diameter of 1km or more and NASA believes all asteroids with a diameter of 10km or more have been detected,52 and continued detection of both asteroids and comets would give us time to prepare if a large NEO were on course to hit Earth. There is at present no known feasible way to deflect NEOs with a diameter of more than a few kilometres,53 though we might be able to develop such technology in the future.

### 1NC---AT: Ozone

#### Plan triggers it cx proves getting rid of satellites sends them down through the ozone

#### No Pollution

NSS 21 7-23-2021 "Why Space Tourism?" <https://space.nss.org/why-space-tourism/> (National Space Society)//Elmer

Space Tourism Will Not Be a Pollution Disaster It is possible to accept all the benefits above, and still express concern about the potential that a really successful space tourism industry will pollute the air and contribute to global warming. Fortunately, Blue Origin’s New Shepard produces only water as an exhaust, so neither is going to be an issue even if there are 1,000s of flights per year. Some have claimed that space tourism will be more polluting per passenger mile since there are fewer passengers per vehicle at the current time, but (a) New Shepard has zero carbon/zero pollution, and (b) over time space tourism vehicles will grow in capacity, just like airliners did. The Virgin Galactic engine is more problematic, but will most likely be replaced by a more sustainable engine before flight volumes become large. Some might be more worried about SpaceX’s StarShip/SuperHeavy driving global warming when used for point-to-point travel on the Earth, and for space tourism. Elon Musk has declared his intention to produce the methane fuel it uses directly from the atmosphere using solar power, assuring that the fuel cycle is carbon-neutral. In terms of air pollution, StarShip in a point-to-point mode will to a large degree replace airplanes currently flying while using cleaner burning methane, potentially resulting in less pollution than is the case currently. In any case, trips to space will likely always remain a minor part of point-to-point travel on the Earth. Currently, in the U.S. alone, there are about 5,700 passenger flights PER DAY. Even if we are simultaneously supporting dozens of orbital hotels, building a city on Mars, and constructing a network of space solar power satellites, we will be hard pressed to generate more than a tiny fraction of that traffic level.

#### Alt Causes

#### 1] Copper

Berkeley 1/13 (Robert Rhew and Berkeley geo chemists, [UC Berkeley professor of geography and of environmental science, policy and management], 1-13-2022, “Copper-based chemicals may be contributing to ozone depletion: Some ozone-destroying chemicals are unaccounted for. Are copper-based fungicides producing them?“, ScienceDaily, accessed: 1-15-2022, https://www.sciencedaily.com/releases/2022/01/220113151441.htm) ajs

In a paper appearing this week in the journal Nature Communications, UC Berkeley geochemists show that copper in soil and seawater acts as a catalyst to turn organic matter into both methyl bromide and methyl chloride, two potent halocarbon compounds that destroy ozone. Sunlight worsens the situation, boosting production of these methyl halides by a factor of 10. The findings answer, at least in part, a long-standing mystery about the origin of much of the methyl bromide and methyl chloride in the stratosphere. Since the worldwide ban on chlorofluorocarbon (CFC) refrigerants and brominated halons used in fire extinguishers starting in 1989, these methyl halides have become the new dominant sources of ozone-depleting bromine and chlorine in the stratosphere. As the long-lived CFCs and halons slowly disappear from the atmosphere, the role of methyl halides increases. "If we don't know where methyl bromide and methyl chloride are coming from, then how can we make sure that those compounds are reduced along with CFCs?" said the paper's senior author, Robert Rhew, UC Berkeley professor of geography and of environmental science, policy and management. "By 2050, we should be back to relatively normal ozone, but things like the continued emissions of methyl bromide and methyl chloride are road bumps in the road to recovery. Copper usage in the environment is projected to increase rapidly in the next few years, and this should be considered when predicting future halogen load and ozone recovery."