### Extra T

#### Interp – debaters must only affirm the resolution

#### Violation – their ‘clarification’ is not prescribed in the resolution nor do they have any cards that explain that – a. fiat in itself is extra T when there is no ought in the resolution which is where you gain access to fiat and b. your implementation method is just not in the resolution at all and you don’t define any way you get there

#### Standards;

#### That explodes the prep burden – not only are there tons of different affs on this topic but this justifies using any different possible implementation method and gain offense off of that – that completely unlimits the topic and kills fairness

#### Let’s them spike out of offense – the boley and byers card is literally the evidence of that – they say they solve new guidelines which answers neg offense

#### They couldn’t even clarify in cross where this comes from – theres no word in the rez that gets you there

#### This is a voter for fairness and education – we cant clash if the prep burden is massively increased and lets them spike out of offense – any other interpretation is super arbitrary

#### DTD – it’s key to norm set and deter future abuse – DTA uniquely makes no sense for disclosure because there is nothing to drop – either way it skewed our ability to contest the entire affirmative

#### Competing interps – Reasonability invites arbitrary judge intervention and a race to the bottom of questionable argumentation – it collapses since brightlines operate on an offense-defense paradigm – you also can’t reasonably disclose – a] wiki rules prove it was reasonable to ask you to disclose b] you either have cites or you don’t

#### No RVIs – A – Encourages theory baiting – outweighs because if the shell is frivolous, they can beat it quickly B – its illogical for you to win for proving you were fair – outweighs since logic is a litmus test for other arguments

### 1nc – brazil da

#### Brazil’s commercial space industry is flourishing.

**Nakahodo 21** [Sidney Nakao Nakahodo, Sidney Nakao Nakahodo is a Lecturer at Columbia University where he specializes in Political, Social, and Economic Development in Brazil. In parallel to his academic responsibilities he is currently involved in a number of technology startups, both as co-founder and advisor. Previously he was based in Washington DC and worked in private sector development and low carbon projects at the World Bank. Prior to joining the Bank he served as senior researcher for a major think tank in Brazil and consulted for the United Nations Development Programme. Sidney holds a Master of International Affairs from Columbia University's School of International and Public Affairs and a Bachelor of Materials Science and Engineering from the University of Sao Paulo (Brazil). He is also a graduate of the Advanced Studies Program in International Economic Policy at the Kiel Institute for the World Economy (Germany). 03-19-2021, "Should Space Be Part of a Development Strategy? Reflections Based Upon the Brazilian Experience," New Space,  [[http://doi.org/10.1089/space.2021.0002](https://doi.org/10.1089/space.2021.0002) accessed 12/14/21](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002%20accessed%2012/14/21)] Adam

* AEB – Brazilian Space Agency
* AIAB – Aerospace Industries Association of Brazil

Lately, there has been a surge of interest in commercial space in Brazil due to institutional development, private sector engagement, and entrepreneurial activities. A Committee of Development of the Brazilian Space Program (CDPEB) was established in 2018 and comprises representatives of several Ministries. The CDPEB has the mandate to advise the President on the implementation of the Brazilian Space Program. Among its primary responsibilities is the elaboration of the General Law of Space, which is expected to provide the guidelines for commercial space activities.[13](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B13) In May 2020, Brazilian Space Agency (AEB) issued a public call inviting local and foreign companies to use its civilian launch facilities.[14](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B14)

The private sector has been actively promoting commercial space. An industrial cluster now constitutes a “Space Valley” around the Sao Jose dos Campos Technology Park (PqTec), with spin-off companies impacting both space and nonspace sectors. The Aerospace Industries Association of Brazil (AIAB) is a trade organization of traditional space companies and defense contractors such as Avibras, Akaer (Opto), Atech, Fibraforte, Orbital, and SIATT. According to its website, AIAB has 30 members working in small satellites, satellite structures, payloads, satellite equipment, ground systems, propulsion, sounding rockets, and launchers.[15](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B15) Braskem, the world's leading biopolymer producer, has partnered with Silicon Valley-born startup Made in Space to produce recyclable plastic objects in the ISS.[16](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B16)

Since 2017, AEB has organized the Brazilian Space Industry Forum, an annual event that congregates stakeholders, fosters the exchange of ideas, and promotes collaboration between domestic and international participants. The U.S.-Brazil CEO Forum, which brings together 12 U.S. and 12 Brazilian CEOs to develop joint recommendations for both governments on how to increase bilateral trade, proposed the development of a framework for joint space research programs in 2019.

A small but vibrant New Space startup community is rapidly forming. The Alliance of Brazilian Space Startups was launched in 2020. Although some companies target low earth orbit and beyond, others are creating solutions to our planet using space technologies. PION has commercial products focusing on space and education. CRON and EMSIS have developed software and hardware for CubeSat missions, whereas Alya Nanosatellites aims to launch a constellation and tap into the earth's observation market. DeltaV, a spin-off from INPE, specializes in propulsion systems. ACRUX and VSAT are working on small satellite launchers. Airvantis sent multiple educational experiments to the ISS and has partnerships with companies and space agencies worldwide. The startup is carrying out Brazil's first lunar mission.[17](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B17) In parallel, Agrosmart, Solinftec, and Strider are harnessing the power of space assets to provide remote sensing, weather forecast, and image processing services to the agricultural sector.[18](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B18) Data companies such as Storm have incorporated open source algorithms developed by NASA for security applications.[19](https://www.liebertpub.com/doi/full/10.1089/space.2021.0002#B19)

#### OUF kills developing space programs

Ian Davis 21 [“Orbital Use Fees Stifle Developing Space Programs” A Sociotechnical Research Paper presented to the faculty of the School of Engineering and Applied Science, University of Virginia, April 6, 2021]

The implementation of Orbital Use Fees as a Pigouvian tax to solve overproduction of satellites would increase the value of the space industry, but an increase in value does not reflect the concentration of that value across space programs worldwide. Charging an OUF on a per satellite per year basis increases the height of the barriers to entry in the space market. By increasing barriers to entry, one encourages the formation of monopolies and oligopolies, which inhibit competition. A decrease in competition leads to an increase in prices. The OUF compounds on that increase in price. In the case of low Earth orbit launch vehicles, a stepping stone for new space programs, the price elasticity of demand is greater than one, which means that increasing prices will see a more than unitary decrease in quantity demanded. Overall, increased barriers to entry combined with the increase in price of satellites will limit the entry capabilities of new competitors and limit the supply of those that do manage to enter the market. Due to the massive value satellite technology brings to a nation’s economy, nations without access to space are at a significant economic disadvantage, meaning that OUFs have the potential to severely inhibit the civilian, military, and commercial operations of nations with developing space programs.

#### Strong space sector cements Brazilian prestige and international influence AND solves alt causes

Dr. Robert C. Harding 17, Professor of Political Science at Valdosta State University, PhD in Political Science from the University of Miami, MA from the University of Louisville, Space Policy in Developing Countries: The Search for Security and Development on the Final Frontier, Paperback Edition, p. 1-4

Change in the post-Cold War period has become the standard of our time. Whether it be the changing power structure of the international system, climate change, the speed of technological innovation, or changes within our societies, the current international situation is one of constant, accelerating transformation. One area that has certainly evolved is the importance and priority given to space-related programs by a growing number of countries around the world. As the various captains of Star Trek fame have somberly declared, space really is the final frontier. But while it has been the basis for engaging science fiction, outer space nonetheless has a very down-to-Earth feature—it has become the ultimate venue for the growth of national power and socioeconomic development among a number of the world’s emergent states.

This new paradigm of international relations has been evolving for over 50 years. From the Soviet Union’s launch of Sputnik in 1957, many states began to include space-based security concerns in their foreign policies, which forced them to consider what the then-new operations in space meant for national security; they also began to integrate space-based assets into their approaches to a wide range of national development challenges, from agriculture to health improvement to the development of natural resources. Though the importance of space to national power, prestige, and potential has been less obvious in the intervening years since the heady days of the Cold War’s space race, its significance has never waned and continues to increase as many states increase national space budgets. Space has, in fact, earned a permanent place at the table in matters of international conflict, peace, national and international development, and international law.

Space was at one time the sole domain of the wealthiest developed countries. The United States and the Soviet Union/Russia, and to some extent the European Union, dominated the use of space and the associated technology in the first decades after World War II. But the last couple of decades of the twentieth century and the first decade of the twenty-first witnessed an increase in the number of countries with state-supported space programs. At this writing, no fewer than 25 developing states, including the rapidly emerging economic powers of Brazil (the sixth largest), China (second largest), and India (fourth largest), possess active national space programs with proven independent launch capability or concrete plans to achieve it soon. Space programs and their related technologies are now an integral part of the strategic and developmental policies of many relatively wealthy developing states that aspire to elevate their international status, security, and economic future. A multitude of other developing states as diverse as Mexico, Nigeria, and Malaysia have established and elevated their own space policy through the creation of national space agencies and the purchase and/or production of satellites and related space technology either through state, private, or joint efforts. For these smaller and rising middle powers, the acquisition of space capabilities is now an integral component of their national policies.

Though commercial enterprise is not a focus of this study, it must be noted that as the cost of space-related technology has decreased dramatically, the expanding number of national state actors in space has been paced by the equally impressive expansion in the number of strictly commercial space companies. Communications, geospatial information, and a wide variety of other services provided by commercial satellites affect much of modern life, and also provide vital information to governments, their agencies, and business interests worldwide. This information covers many of the same areas that national governments find important to national well-being, such as weather and climate monitoring, water management, environmental observation, topographic mapping, natural disaster planning, and crop management. These services are provided commercially by a growing cadre of companies that build satellites, create the associated technologies, and are beginning to provide basic launch services, all areas that were previously the exclusive domain of state-owned space agencies.

The growth of commercial space services has been a double-edged sword for states. By 2010, the global space industry was estimated to be worth US$276.52 billion, an 18 percent increase over 2009.2 Of this total, worldwide commercial satellite industry revenues rose 11 percent to US$160.9 billion in 2010.3 Despite sporadic attempts to control its proliferation, commercial satellite imagery has become so good and so broadly disseminated that many national governments, for example Israel, have complained that its existence endangers national security because potential terrorists now have access to the detailed satellite imagery necessary to plan precise attacks. Until the 1990s, such high-resolution satellite imagery was almost exclusively the domain of the militaries of developed space powers, which, for national security reasons, did not generally make their data public. And since there were a limited number of states with the capability to launch surveillance satellites, the potential sources were likewise limited.

Those civilian satellites that did operate before the 1990s provided imagery of a much lower spatial resolution than their military counterparts, typically not showing clear images of objects smaller than 10 meters across. However, that situation changed with the launch of the US company Lockheed Martin’s Ikonos satellite in 1999. Its spatial resolution of one meter meant that for the first time, no country could depend on geographic distance and national borders to ensure state secrets. The situation became even more fluid through the 1990s and into the 2000s as the transfer of space technology—satellites and associated technology— became a commercially viable avenue for major satellite producers. Today, imagery services such as Google Earth have revolutionized access to satellite imagery in the same way that cell phones have changed communications access for hundreds of millions of people around the world—they have democratized it.

Nonetheless, the growing actual importance of space policy stands in stark contrast to the popular perception of the significance of space in the modern world. Indeed, more than 50 years after the launch of Sputnik, the exploration of near space via the moon-landings, and various robotic missions to the solar system’s planets, surveys have shown that few people in the West still consider space as anything novel. The popular mindset has moved on to the wonders of the “information age” and the benefits (or detriments) of globalization. The generations of technology spawned by those earlier days of space exploration have been indispensable in the creation of our high-tech, instantaneous world, but space and its benefits are now so integrated into our daily infrastructure that most people do not give it a second thought. The reactions to the Challenger and Columbia space shuttle tragedies aside, public complacency toward the importance of space has become the rule, rather than the exception.

Despite these popular sentiments, the recent expansion of space programs in the developing world demonstrates that national governments have never altered their view of the importance of space for achieving and expanding national power—militarily or socioeconomically. This expansion of space programs is especially noteworthy because it reflects an emergent democratization of space, which is one of the most important factors in the changing distribution of power in the current international arena. Many countries now use satellites for communications and obtaining weather data, through ownership or simply purchase of the data. In fact, this broadening and expansion of the usage of space and the attendant transformation of power distribution is seen by some observers as leading to a new space race, albeit one that has yet to gain the high profile that the previous contest had during the Cold War. This competition is emerging as the catalyst for a new generation of space-related policies and innovations in both established and emerging space-faring countries. Consider how one recent space-related event affected the dynamic of interstate relations.

In January 2007, the news that China had successfully tested an anti-satellite ballistic missile sent shockwaves around the world’s foreign policy community. By shooting down one of its own aging satellites from low Earth orbit, China—a country that only a generation before was seen as poor by most measures—demonstrated its intent to join the existing space powers, thus attracting attention, if not commanding respect as a potential world power. China plans to land a nuclear-powered unmanned rover on the moon by 2013, and to have in place an orbital military space station later in the second decade of this century.4

But while China’s space policy is more ambitious and better funded than those of other developing states, it is by no means unique. The next year of this twenty-first century space race saw India following up on the Chinese success by launching its own successful probe to the moon. Around the world, increasing numbers of developing countries are investing in space-related technologies, seeking partners for space projects, and even constructing launch facilities that may one day rival the established space powers of the United States, Russia, the European Union, and more recently Japan.

But what motivates a developing country, which by definition is relatively poor, to spend the comparatively large amounts of money required for these space adventures? The short answer is that, like the United States and the Soviet Union before them, developing countries pursue active space policies because of the recognition that space is, in many ways, the ultimate measure of national power, international prestige, and demonstrated national potential. Moreover, space-based assets allow states to more fully utilize their national resources and to expand the reach of domestic socioeconomic programs into areas as diverse as agriculture, education, medicine, and economic development. Thus a space program figures as an integral facet of any capable state’s national security and developmental policies. The benefits of a successful space program include advanced communications, a platform for technology improvement, greatly enhanced geographic information, and, for some, expanded defensive and intelligence capabilities. Equally important, space programs can provide the host state with increased international prestige, which accrues both domestic and international advantages. Hence, developing countries are merely being rational state actors and following the path pioneered by those space-faring states that preceded them.

#### It's key to project success AND overcome historical domination

Dr. Robert C. Harding 17, Professor of Political Science at Valdosta State University, PhD in Political Science from the University of Miami, MA from the University of Louisville, Space Policy in Developing Countries: The Search for Security and Development on the Final Frontier, Paperback Edition, p. 23

Space programs bestow equally important soft power, especially those that involve human space flight. Every major space power has spent considerable funds to achieve the ability to put humans in space for both tangible and intangible benefits. Logsdon (2007) has argued that human space flight ranks among the most intensely patriotic symbols of modern times.27 Some of the emerging space actors have pursued or are pursuing human space flight as a demonstration of their programs’ sophistication, and their astronauts are held up by their governments as national patriotic icons. As will be discussed in Chapter 3, for the largest EMSAs—Brazil, China, and India—their space programs have been touted not only as national accomplishments but as a national catharsis to overcome histories of direct and indirect domination by outside powers and to project to others a sense of greatness.

#### Brazilian leadership solves multiple existential threats

**Huck 20** [Luciano Huck, from the Law School of the University of São Paulo, Host of Rede Globo, Founder of Joá Investments 1/15/2020, "This country is vital to 'global survival'," World Economic Forum, <https://www.weforum.org/agenda/2020/01/what-happens-next-in-brazil-has-global-consequences-here-are-three-priorities-for-the-next-decade/> accessed 12/14/21] recut Adam

From spiralling geopolitical tensions in the Middle East to raging forest fires in Australia, 2020 certainly started with a bang. A shortlist of some of our biggest existential threats includes accelerating climate change, staggering inequalities and the failure of nation-states to cooperate to mitigate shared global risks. With all the bad news, it is hard to see the incredible possibilities on the horizon, not least advances in health, education and the boundless potential of new technologies. A growing number of businesses including huge asset managers like BlackRock are also becoming greener. All of these challenges and opportunities are apparent in Brazil, the world’s fourth-largest democracy and its ninth biggest economy.

Brazil will play a leading role in how the next decade unfolds. A big reason for this is its immense natural resources - including over 40% of the world’s tropical forests and 20% of the planet's fresh-water supply. The Amazon is often described as the "lungs of the world" - for good reason. But the lungs are collapsing as a result of man-made fires and runaway deforestation. With more than 210 million citizens, Brazil also has an impressive stock of human resources. But it is also convulsed by breathtaking inequality and grinding poverty. Complicating matters, we are facing a crisis of political leadership and shirking our international responsibilities.

What happens next in Brazil has far-reaching consequences for global survival. The decisions adopted by Latin America's largest country - whether in relation to protecting the Amazon, reducing inequality or strengthening multilateral cooperation - will help determine whether this is the world's best century or its last one. The sheer scope of the challenges facing Brazilians can feel overwhelming. Without a transformative vision and narrative, a renewal of political leadership, and tangible improvement, people feel rudderless and afraid.

For the past 20 years, I've been taking the pulse of Brazil. I produce and present a popular television program reaching roughly 30 million Brazilians every week. Most of the time, I travel across the country listening to the inspiring and heartbreaking stories of my countrymen and women. They remind me every day why I need to contribute to building a better Brazil. So here are three challenges that I firmly believe Brazilians can turn into opportunities.

Amazon 4.0

Dramatic fires and deforestation in the Amazon made global headlines in 2019. Despite the best efforts of the Brazilian authorities to conceal the problem, the Science Ministry's own satellite data showed that deforestation rates were at the highest levels in two decades. While falling out of the international news cycle, the destruction continues. If deforestation persists at current rates, irreversible die-off could convert the world’s largest tropical forests into its largest savannah. This would release up to 140 billion tons of stored carbon into the atmosphere, effectively scuppering efforts to meet the Paris Agreement targets.

A radical new paradigm is needed to ensure the sustainable stewardship of Brazil's stunning cultural and biodiversity. It must harness the Amazon's most powerful resource - the 25 million people who live there. For one, there has to be zero tolerance for deforestation and a concerted focus on improving the productivity of areas where forests have already been cut down. Roughly 90% of deforestation in the Amazon is illegal and at least two-thirds of the 80 million hectares of cleared land are under-used, degraded and abandoned. Just as important as sustainable agri-business, the expansion of eco-tourism, investment in biotechnology research and the development of fairly-traded rainforest products.

In a survey conducted in August of 2019, the majority of Brazilians thought that the Amazon rainforest was a reason for national pride. At that time, up to 68 percent of respondents in Brazil strongly agreed with the sentence

Reducing inequality

Deepening social and economic inequality within countries is fundamentally reconfiguring domestic and international politics. In some cases, governments are retreating from multilateral cooperation and reverting to reactionary nationalism and protectionism. These dynamics are apparent in Brazil, among the world’s most unequal countries. Although Brazil made important advances in reducing poverty since the 2000s, inequality remained stubbornly high. And in recent years, per capita income plunged and the gap between the rich and poor started rising, wiping out many social gains of the previous three decades. Today, the average monthly income of the wealthiest one per cent is more than 33 times the income of the poorest 50%. Inequality not only hinders economic growth, but it also fuels polarization and populism.

Brazil needs to put inequality reduction at the top of the national agenda in 2020. A combination of common-sense interventions are required: ensuring the fairer collection of taxes, reducing subsidies for the wealthy, rolling-out more equal opportunity policies, and stimulating opportunities for the most vulnerable. Most important of all is dramatically improving the quality of basic public education, especially early childhood schooling. Brazil's education system is failing poorer families. Wealth inequality is reinforcing inequality of opportunity for the next generation. To win the war on inequality, Brazil needs an inclusive growth strategy, one that is not limited to growing income and smart deregulation but also ensures that quality public services delivering security, education, health, sanitation and transportation reach all citizens, not just those who pay a premium for them.

Restoring leadership

After years of corruption and stagnation, Brazil is suffering from sharp societal divisions and simmering tensions. In 2013, well before the street protests that flared up in Bolivia, Chile, Colombia and Ecuador, Brazil experienced the largest demonstrations since the restoration of democracy in 1985. The impeachment of President Dilma in 2016, the unprecedented unpopularity of the Temer administration and the election of far-right Jair Bolsonaro in 2018 revealed the extent of dissatisfaction with the status quo. Bolsonaro was partly elected because the credibility of Brazil's political establishment was demolished by ongoing “Car Wash” investigations into government corruption. Exhausted by scandal and stagnation, Brazilians voted for change.

To tackle the big challenges of the next decade, Brazil needs to restore and renew its political leaders from the top to bottom. Accountable, responsible and representative leadership and public service are fundamental to revitalizing the social contract. This won't happen spontaneously. It requires a conscious effort to attract and invest in talent. it also demands that each and every Brazilian gets involved. In 2017, I joined Agora, one of several dynamic civic movements investing in a new generation of leaders committed to a more inclusive and sustainable Brazil. And in 2018, I co-founded RenovaBR, attracting over 4,600 submissions from people who'd never been involved in politics for training in governance and ethics. Of the 120 successful applicants, 17 were elected to federal office that year.

Brazil is a country of infinite possibility. It has achieved breathtaking gains over the last generation - bringing tens of millions of people out of poverty. But these improvements were fragile. As we’ve seen in other parts of the world, when societies and living standards start moving backwards, social protest and unrest are not far behind. This is dangerous. Irresponsible leaders can take advantage of the fear and uncertainty that result. But we can also fight back. We will start rewriting the Brazilian story in 2020, first by acknowledging our most intractable problems and then by leveraging our tremendous creativity, scientific prowess and expertise. This means stepping out of our comfort zones. Powered by civic and social entrepreneurs from across the political spectrum, we can rebuild a positive vision for the future in Brazil.

### Commercialization DA

#### The plan drives the commercialization of outer space.

1AC Lavars 20. Nick has been writing and editing at New Atlas for over five years, where he has covered everything from distant space probes to self-driving cars to oddball animal science, and everything in between. He previously spent time at The Conversation, Mashable and The Santiago Times, earning a Masters degree in communications from Melbourne’s RMIT University along the way. When not tapping away at his desk, you might find him traveling the world in search of the weird and wonderful. Failing that, he’ll probably be watching sport. 5/26/20. [New Atlas, “Could orbital fees force satellite operators to deal with space junk?,” <https://newatlas.com/space/orbital-fees-satellite-space-debris/#:~:text=The%20orbital%2Duse%20fee%20would,for%20the%20scheme%20to%20work>.] Justin

"That's not the same as a launch fee," Rao says, "Launch fees by themselves can't induce operators to deorbit their satellites when necessary, and it's not the launch but the orbiting satellite that causes the damage." The orbital-use fee would function like a carbon tax or fisheries management fees, with all countries launching and operating satellites needing to participate and charge the same fee per unit of collision risk for the scheme to work. It could function as a one-off payment or tradable permits, with the fee calculated to correlate with the cost to the industry of another satellite entering orbit, which demands more resources to reduce the collision risk. The fee could also be determined by the orbit the operator wishes to use, with different orbits carrying different risks of collision. "In our model, what matters is that satellite operators are paying the cost of the collision risk imposed on other operators," says Daniel Kaffine, professor of economics at the University of Colorado Boulder and co-author on the paper. As part of their study, the researchers also projected how the introduction of an orbital-use fee would impact the value of the satellite industry as a whole. Due to the reduction in collisions and associated costs, like replacing damaged satellites, for example, the team estimates the value of the industry would increase from US$600 billion to around $3 trillion. In line with this and the rising value of cleaner orbits, the fee would also increase. The team found the optimal rate of rise to be 14 percent per year, meaning the fee would equate to around $235,000 per satellite, per year, by 2040. "In other sectors, addressing the Tragedy of the Commons has often been a game of catch-up with substantial social costs,” says co-author Matthew Burgess from the University of Colorado Boulder. “But the relatively young space industry can avoid these costs before they escalate.”

#### Commercialization of outer space drives Russian militarization – that escalates

Victoria Samson 22 [Victoria Samson is the Washington office director for the Secure World Foundation, an organization that focuses on space sustainability, and she has over 20 years of experience in military space and security issues. Previously, Ms. Samson was a senior analyst for the Center for Defense Information. She also was a senior policy associate at the Coalition to Reduce Nuclear Dangers, a consortium of arms control groups. Earlier, she was a researcher at Riverside Research Institute, where she worked on war-gaming scenarios for the Missile Defense Agency “The complicating role of the private sector in space”, Bulletin of the Atomic Scientists, 78:1, 6-10, 2022. DOI: 10.1080/00963402.2021.2014229]

What it all means for geopolitical changes This shift toward the dominance of space by commercial entities is leaving Russia behind, a fact that has destabilizing security implications as well. Russia does not have much of a commercial space sector, which is not surprising, given its historical antipathy toward the private sector in space. Russia’s civil space program is struggling to find its footing and has had some extremely public quality control lapses recently (Axe 2021). Roscosmos – the Russian State Corporation for Space Activities, the organization in charge of Russia's civil space program – has been racked with allegations of corruption, to the point where the Russian government has made reporting on the doings of Roscosmos off-limits to foreigners (Moscow Times 2021). Russian launch vehicles are no longer the sole conduit for access to the International Space Station, effectively reducing one place where the United States and Russia were cooperating in space. In fact, the International Space Station itself is coming up on the end of its lifetime. While there is interest in extending it, at some point, the space station will be retired, eliminating one of the most effective forms of space diplomacy that we have seen in the space age. At present, it would appear that the next space station that NASA might contribute to is one created by a commercial consortium, solidifying even more the role of the commercial sector in space. This development leaves open one obvious pathway for Russia to maintain geopolitical dominance and national prestige in space: through its military space capabilities. By continuing to invest in its counterspace capabilities and programs, Russia can prove its relevance in the new world order that is shaping up right now. This has very clear implications for global security and stability, as Russian counterspace efforts shape the United States’ military space programs and plans (and vice versa). This was underlined for the international community on November 15, 2021, when astronauts on the International Space Station were told to take cover in their Soyuz (Russian) and Dragon (US) spacecraft in order to protect themselves from incoming space debris. The culprit? Russia admitted to having held a test that destroyed one of its own derelict satellites (Roulette 2021). The impact by a direct-ascent interceptor of Russia’s Nudol ground-based system resulted in an estimated 1,500 trackable pieces of debris; furthermore, it was done at an altitude (approximately 480 kilometers) where the debris will be around for years, if not a decade or more. That is not the only counterspace capability Russia has been developing of late. Russia has been working since 2010 to test technologies for rendezvous and proximity operations that might become the basis for some sort of co-orbital anti-satellite capability; some of these technologies might be linked to a co-orbital anti-satellite program dating back to the Cold War-era (Secure World Foundation 2021). Additionally, Russia appears to be working on a new co-orbital program called Burevestnik. While it is possible that some of Russia’s work here could be used to develop the ability to inspect or surveil other satellites, there have been two tests where two sub-satellites have been deployed at a high velocity, which indicates that there might be a weapons element to at least some of their rendezvous and proximity operations work. Russia has integrated electronic warfare into its military operations, giving it the capability to jam area GPS receivers (but not the ability to use radiofrequency interference to interfere with the satellites themselves). Russia has also been working on a legacy program that is attempting to create an airborne-laser platform that could target optical sensors of satellites. Stepping away from Russia’s domestic investments in counterspace capabilities, it is possible that this vulnerability in Russia’s stature stems at least in part from the changing nature of space – which may be a factor in its interest in allying with China on space-related issues. Russia and China have their own complicated relationship, independent of the United States, and this alliance has not always been present. For example, Russia allowed the United States to keep China out of the International Space Station, something that the United States could not have accomplished if Russia – as a major partner of the International Space Station and responsible for half of the station – was not nominally on-board with the idea. This makes the memorandum of understanding that Russia and China signed in March 2021 to develop an International Lunar Research Station even more striking, because it puts the two together to cooperate in lunar exploration (Jones 2021). A return to the rivalries of the Space Age? In fact, it seems that we are seeing the possible creation of a new bipolar world order in space. But unlike during the early part of the Space Age when the two poles consisted of the United States and the USSR, this new one has the United States on one side and China (with Russia) on the other. China is working on its own space station, the Tiangong, which it can use for soft power outreach and diplomatic initiatives (much like how the International Space Station has been used by the United States). Meanwhile, Russia and China have encouraged countries to join them in their lunar research initiative, which could counter US plans to get back to the moon. The United States has been promoting the Artemis Accords as a way to ensure that lunar exploration and use are done in a manner consistent with the principles enshrined in the Outer Space Treaty. While 14 countries have signed onto the Accords to date (with France indicating in November 2021 that it was interested in doing so as well), neither Russia nor China have signed on and both have expressed concerns about the Accords (Smith 2021). Additionally, while in theory the International Lunar Research Station and Artemis Accords are not contradictory and countries could participate in both, it is unclear whether that could happen in reality. The fundamental nature of space is changing to one of a domain that is dominated by commercial actors. This change will have consequences for international stability, both in terms of how it demonstrates that the old governance structure for space is being left behind as the domain evolves and how it highlights Russia’s declining rank in global space powers. It is important to work to develop new governance of space to meet the emerging needs of this ecosystem. Otherwise, we run the risk of inadvertent escalation and even conflict in space that can extend down to Earth.

## Case

### Overview

#### Their own boley and byers as well as Rao et al. 20 prove that it’s a self correcting problem

#### No Kessler risk

von Fange 17 [Daniel Von Fange‏, Distributed systems engineer, “Kessler Syndrome is Over Hyped” May 21st 2017, <http://braino.org/essays/kessler_syndrome_is_over_hyped/>] [modified for readability]

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 [one thousand kilometers] 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 [one in ten thousand]. So even in the worst case, we don’t lose access to space. Now though you can travel through the debris, you couldn’t keep a satellite alive for long in this orbit of death. Kessler Syndrome at its worst just prevents us from putting satellites in certain orbits. In real life, there’s a lot of factors that make Kessler syndrome even less of a problem than our worst case though experiment. Debris would be spread over a volume of space, not a single orbital surface, making collisions orders of magnitudes less likely. Most impact debris will have a slower orbital velocity than either of its original pieces - this makes it deorbit much sooner. Any collision will create large and small objects. Small objects are much more affected by atmospheric drag and deorbit faster, even in a few months from high LEO. Larger objects can be tracked by earth based radar and avoided. The planned big new constellations are not in High LEO, but in Low LEO for faster communications with the earth. They aren’t an issue for Kessler. Most importantly, all new satellite launches since the 1990’s are required to include a plan to get rid of the satellite at the end of its useful life (usually by deorbiting) So the realistic worst case is that insurance premiums on satellites go up a bit. Given the current trend toward much smaller, cheaper micro satellites, this wouldn’t even have a huge effect. I’m removing Kessler Syndrome from my list of things to worry about.

#### Privatization solves Kessler

Page and Besco 21 [Jae Page, Department of Geography, Geomatics and Environment, University of Toronto, Mississauga, ON, Canada. Laurel Besco, Department of Geography, Geomatics and Environment, University of Toronto, Mississauga, ON, Canada "Dispossession through collision: low-Earth orbit and planetary sustainability." Territory, Politics, Governance (2021): 1-18.]

Incentivizing users to invest in the resource will ultimately require political will. In a world where neoliberal ideals of privatization and competition reign over international negotiations, it is likely that those with a financial advantage will control the political discourse. As such, incentives for innovation will likely come about in two ways. The first incentive to invest in LEO may stem from a need to reduce liability and perpetuate market growth. Adilov et al. (2018) demonstrate that increased launches will result in an ‘economic’ Kessler syndrome before a physical one. According to their model, the increased risk of orbital debris will reach a point where firms no longer can make a profit from new satellite launches (Adilov et al., 2018). Finding solutions to remedy orbital debris may therefore proceed from corporate interests. Organizations such as Astroscale already see the potential business opportunities for ADR and are currently lobbying governments for space-sustainability policies that will assist in new market growth. Passing domestic legislation for debris removal is certainly an important step to securing a sustainable LEO

#### Their solvency evidence concedes this – it says that debris constrains growth of the industry and an OUF drives it

#### No long term impact

Adam Smith 21 (Adam Smith, 8/9/2021, “Space Debris is blocking our path off the planet and legal loopholes mean Earth’s governments don’t have to care”, https://www.newsbreak.com/news/2335529276985/space-debris-is-blocking-our-path-off-the-planet-and-legal-loopholes-mean-earth-s-governments-don-t-have-to-care)

Fortunately, there is time left for humanity to rectify its situation. Low altitude space (550 kilometres) can recover from a series of fragmentations over approximately half a decade, Aaron C. Boley, associate physics professor at The University of British Columbia, told The Independent – although higher altitudes (700 kilometres) can take ten times as long to recover. “Even if fragmentations were to take place at low enough altitudes that we might expect the orbits to recover in a few years, the situation would still be largely disruptive. Plus, energetic fragmentations, such as a satellite-satellite collision or explosion, will place debris on a wide range of orbits”, Professor Boley says, although it is unlikely that it would ever reach a situation where humanity would absolutely trap itself on Earth.

#### Timeframe is super long even if they are right about everything

Ted Muelhaupt 15 Theodore (Ted) J. Muelhaupt, Associate Principal Director, System Analysis and Simulation Subdivision, joined Aerospace in 1980. This subdivison is the primary Aerospace organization responsible for analysis of system-level performance expected from satellite systems, and oversight of astrodynamic and system modeling specialists. He coordinates Aerospace’s efforts in space debris, space situational awareness, and collision risk assessment, and manages the Center for Orbital and Reentry Debris Studies. He has a B.S. in aerospace engineering and an M.S. in mechanics from the University of Minnesota. "Understanding Space Debris Causes, Mitigations, and Issues", Crosslink Fall 2015 Vol. 16 No. 1, [https://aerospace.org/sites/default/files/2019-04/Crosslink%20Fall%202015%20V16N1%20.pdf], AVD

Short-term debris cascades are impossible. This may seem like a contradiction to the statement above, but one must consider the timescale. The predictions of the Kessler syndrome are quite real and broadly based, but the timescale is in decades and centuries, not hours and days. Therefore, Kessler is right, but the movies are wrong. This is a slowmotion disaster, and the good news is that it can be stopped or slowed with immediate action by the space community.

#### Low risk – any impact is more probable

Nancy Gallagher 10: Nancy Gallagher (professor of security studies) May 2010 Center for International and Security Studies at Maryland, University of Maryland Astropolitics, Volume 8 Issue 2, Space Governance and International Cooperation https://drum.lib.umd.edu/bitstream/handle/1903/15657/space\_governance\_and\_international\_cooperation.pdf?sequence=1&isAllowed=y

In sum, there are good reasons for conceptualizing space cooperation as managing a global commons so that a growing number of individual space actors can continue to use it in a safe, equitable, and sustainable manner, but there are also major reasons why framing the need for greater space cooperation in this way is unlikely to produce international agreements that make a major difference in outcomes. Interference from overcrowding and accidents caused by space debris have so far been low probability, low consequence events. This makes it hard to convince policy makers outside of the space community that they should devote significant time, money, and political capital to get more rapid international agreement on, and more widespread compliance with, stricter rules, wider information sharing, and better managerial processes. With ongoing wars and the global economic crisis, a 1-in-1,000 chance of a given satellite colliding with a chunk of space debris during a ten-year functional lifetime does not sound too bad.20 Debris cascades could dramatically increase the future risks and costs of space operations, but that would still pale by comparison with the consequences of global warming or rampant nuclear proliferation.

### Grids

#### The impact is inefficiency not grid collapse

Paul Tullis 19 [Paul Tullis is a journalist in Amsterdam who writes about the intersections of science, technology and business “GPS Is Easy to Hack, and the U.S. Has No Backup” Scientific American, December 1, 2019 https://www.scientificamerican.com/article/gps-is-easy-to-hack-and-the-u-s-has-no-backup/]

Industry is especially reliant on GPS because it is the most accurate timekeeping method on Earth and it is free. In the days before GPS, electric-grid operators could only estimate the load on their transmission lines, which led to inefficiencies; today GPS timing allows them to track the state of the grid and optimize operation in response to real-time demand. Financial markets once set their system time to a clock on the wall. Inaccurate timekeeping and uncoordinated transactions were widespread even after trading became computerized because early software used a clock inside a computer that was aligned by hand to the official time of the National Institute of Standards and Technology (NIST), the country’s timekeeper. Today’s financial systems, from a corner deli’s credit-card machine to stock markets, use GPS to time-stamp and verify transactions, freeing retailers from the need to transmit sales at the end of the day and enabling the worldwide, ultrahigh-frequency trading so prevalent now.

#### Alternatives solve

Paul Tullis 19 [Paul Tullis is a journalist in Amsterdam who writes about the intersections of science, technology and business “GPS Is Easy to Hack, and the U.S. Has No Backup” Scientific American, December 1, 2019 https://www.scientificamerican.com/article/gps-is-easy-to-hack-and-the-u-s-has-no-backup/]

The real shocker is that U.S. rivals do not face this vulnerability. China, Russia and Iran have terrestrial backup systems that GPS users can switch to and that are much more difficult to override than the satellite-based GPS system. The U.S. has failed to achieve a 2004 presidential directive to build such a backup. No actual U.S. calamities have happened yet; if they had, policy makers would have finally acted. But as disaster experts like to note, the U.S. always seems to prepare for the previous disaster, not the upcoming one.

#### Numerous alt causes

Duke Buckner 21 [Duke Buckner, Microchip Technology “Heading off grid disaster: it’s about time” Power Grid International, 11.23.2021 https://www.power-grid.com/executive-insight/heading-off-grid-disaster-its-about-time/#gref]

The world’s Global Navigation Satellite System (GNSS) has never been more integral to daily lives than it is now. It is like an invisible utility, as vital as power or water. The position, navigation, and time (PNT) information it provides is crucial to the reliable functioning of critical infrastructure such as energy, telecommunications, transportation, emergency services and financial transaction networks. Yet never has the system been more vulnerable to interference from threats including jamming and an attack called spoofing, when a radio transmitter located near a target receiver feeds it false information.

The sources of spoofing range from malevolent nation-states to delivery drivers who, trying to disguise their location and long lunch breaks from their bosses with do-it-yourself jamming devices, have inadvertently disrupted local air traffic control operations. Governments and the private sector are all rallying around the development and deployment of backup strategies and solutions, but until they are available on a nationwide scale wherever critical infrastructures operate, the industry faces serious challenges. Infrastructure operators have backup generators, but they do not have backup PNT sources. Many of the critical infrastructure operators provide safety-of-life services and demand to be available 100 percent of the time, 24 hours a day, 7 days a week, 365 days a year.

### Acidification

#### Acidification has no impact – if there is one, it’s positive.

**Goklany, 15**—independent scholar and author, member of the US delegation that established the IPCC and helped develop its First Assessment Report, he subsequently served as a US delegate to the IPCC, and an IPCC reviewer, he is a member of the GWPF’s Academic Advisory Council (Indur, “CARBON DIOXIDE: The good news”, <http://www.thegwpf.org/content/uploads/2015/10/benefits1.pdf>, dml)

Increasing carbon dioxide levels in the atmosphere clearly increase the growth rate of land plants, other things being equal. Is the same true for marine photosynthesisers such as algae, phytoplankton and symbiotic zooxanthellae in corals? Carbon dioxide dissolves in seawater and there is good evidence that this causes enhanced growth rates in many taxa. This is despite the fact that dissolved carbon dioxide forms bicarbonate ions, which slightly decrease the pH of the water, leading to what is often inaccurately called ‘ocean acidification’. There is no likelihood of the ocean’s average pH getting anywhere near as low as 7 because of elevated carbon dioxide concentrations during the next three centuries. Ocean pH currently averages about 8 and is forecast to fall by 0.2 pH units or so during the present century. This change is considerably smaller than the difference in pH between different parts of the ocean, different days in the same part of the ocean, and even different times of day in coral reef lagoons. An examination of upper-ocean pH for a wide variety of ecosystems ranging from polar to tropical, open-ocean to coastal, kelp forest to coral reefs, indicates that variations in month-long pH spanned a range of 0.024 –1.430 pH units, and found that many organisms ‘are already experiencing pH regimes that are not predicted until 2100.’93 In other words, the projected change in pH is much smaller than the noise in its natural variation. So it is highly speculative that this small long-term trend will bring problems for marine life that are greater than the benefits of extra carbon dioxide for photosynthetic marine organisms and hence the whole marine biosphere.

Here follow some examples of studies finding positive or neutral impacts of lower pH on different groups of marine photosynthesisers:

Cocolithophores Iglesias-Rodriguez et al. found evidence that ‘calcification and net primary production in the coccolithophore species Emiliania huxleyi are significantly increased by high carbon dioxide partial pressures’ in the laboratory while ‘field evidence from the deep ocean is consistent with these laboratory conclusions, indicating that over the past 220 years there has been a 40% increase in average coccolith mass’.94 Coccolithophores are among the most abundant phytoplankton in the oceans. Notably, Duarte et al. classify the evidence for a decline of calcifiers due to ocean acidification for this century as weak.95

Diatoms In diatoms, ‘no significant change in the yield was found between the low and high carbon dioxide levels’ and ‘increased dissolved carbon dioxide concentration did not affect the mean cell size and cell volume of Phaeodactylum tricornutum’.96 Foraminifera Vogel and Uthicke found that ‘the species investigated were still able to build up their calcite skeletons in carbon dioxide conditions predicted for the year 2100 and beyond’, and ‘contrary to expectations, M. vertebralis showed significantly increased growth rates in elevated carbon dioxide’.97

Marine algae and other marine plants In marine algae, many studies find that enhanced carbon dioxide results in faster growth. In other marine plants such as eelgrasses, Palacios and Zimmermann concluded that ‘ocean acidification will stimulate seagrass biomass and productivity,

leading to more favorable habitat and conditions for associated invertebrate and fish species’.98 Indeed, according to Hendriks et al, the carbon dioxide fertilisation effect might reverse acidification: ‘sea-grass photosynthetic rates may increase by 50% with increased carbon dioxide, which may deplete the carbon dioxide pool, maintaining an elevated pH that may protect associated calcifying organisms from the impacts of ocean acidification’,99 at least in their vicinity.

Thus for many primary producers in the ocean, increased levels of dissolved carbon dioxide will stimulate ecosystem productivity with positive implications for the food chain. Studies suggest that this effect will probably outweigh any drawbacks from slightly lower pH.

Could the same be true for corals? Corals build reefs by calcification, depositing calcium carbonate in their skeletons. This process is energetically costly and the energy cost increases at lower pH. However, the energy is supplied by symbiotic zooxanthellae in the corals, which photosynthesise.100 Thus the limiting factor on coral growth may be biological rather than chemical. Muscatine et al. conclude that ‘symbiotic algae may control calcification by. . . modification of physico-chemical parameters within the coral polyps’.101 This could explain why the growth rate of coral reefs shows no signs of declining as predicted. As Kleypas et al. argue with respect to benthic corals, ‘[t]he drawdown of total dissolved inorganic carbon due to photosynthesis and calcification of reef communities can exceed the drawdown of total alkalinity due to calcification of corals and calcifying algae, leading to a net increase in aragonite saturation state’.102

The general finding that calcifier organisms do not deposit less calcium when carbon dioxide concentrations increase is borne out by an experimental study by Findlay et al. using three molluscs, one barnacle and a brittle star. They write that ‘contrary to popular predictions, the deposition of calcium carbonate can be maintained or even increased in acidified seawater’.103 Similarly, a ‘field growth experiment revealed seven times higher growth and calcification rates of [blue mussel Mytilus edulis] at a high carbon dioxide inner fjord field station . . .in comparison to a low pCO2 outer fjord station. . . ’104

Recent laboratory experiments to investigate the variation in the coral calcification rate of the scleractinian coral Siderastrea siderea – an abundant reef-builder in the Caribbean Sea – with warming and changes in pH found that under a more-orless constant temperature of 28◦C, calcification rates increased as atmospheric carbon dioxide was increased from near-pre-industrial levels of 324 ppm to 447 ppm, remained relatively unchanged at the predicted end-of-century value of 604 ppm and then returned to near-pre-industrial rates at 2500 ppm.105 It also found that while holding the carbon dioxide level at 488 ppm, calcification rates increased as the temperature increased from 25◦C to 28◦C, but it declined by 80% when temperature was increased to 32◦C. These results suggest that rapid ocean warming will pose a threat to S. siderea in the longer term but that ocean acidification will be little or no threat for several centuries. Moreover, the experimentally determined calcification rates might have been adversely affected by the disruption to the coral due to the need to cut, transplant and prepare it for analysis. No less important is the fact that the changes in pH and temperature were imposed over a period of just a few months. In the real world such changes would occur over a century or more, which means some adaptation cannot be precluded, for example via symbiont shuffling.106

By far the largest peer-reviewed meta-analysis of the effect of ocean acidification upon marine life came to a strikingly unfashionable conclusion. Hendriks et al. studied the results of 372 experiments involving raised carbon dioxide levels on 44 species and found ‘limited experimental support’ for the theoretical predictions of negative impacts of ocean acidification. Marine organisms, they conclude, are ‘more resistant to ocean acidification than suggested by pessimistic predictions. . . ’, and thus this phenomenon ‘may not be the widespread problem conjured into the 21st century’.107

### Ag

#### Food insecurity doesn’t cause war.

Vestby et al 18, \*Jonas, Doctoral Researcher at the Peace Research Institute Oslo, \*\*Ida Rudolfsen, doctoral researcher at the Department of Peace and Conflict Research at Uppsala University and PRIO, and \*\*\*Halvard Buhaug, Research Professor at the Peace Research Institute Oslo (PRIO); Professor of Political Science at the Norwegian University of Science and Technology (NTNU); and Associate Editor of the Journal of Peace Research and Political Geography. (5/18/18, “Does hunger cause conflict?”, *Climate & Conflict Blog*, <https://blogs.prio.org/ClimateAndConflict/2018/05/does-hunger-cause-conflict/>)

It is perhaps surprising, then, that there is little scholarly merit in the notion that a short-term reduction in access to food increases the probability that conflict will break out. This is because to start or participate in violent conflict requires people to have both the means and the will. Most people on the brink of starvation are not in the position to resort to violence, whether against the government or other social groups. In fact, the urban middle classes tend to be the most likely to protest against rises in food prices, since they often have the best opportunities, the most energy, and the best skills to coordinate and participate in protests.

Accordingly, there is a widespread misapprehension that social unrest in periods of high food prices relates primarily to food shortages. In reality, the sources of discontent are considerably more complex – linked to political structures, land ownership, corruption, the desire for democratic reforms and general economic problems – where the price of food is seen in the context of general increases in the cost of living. Research has shown that while the international media have a tendency to seek simple resource-related explanations – such as drought or famine – for conflicts in the Global South, debates in the local media are permeated by more complex political relationships.

### Miscalc

#### This ev’s way out of context – it’s about ASAT attacks not debris

#### No 1AR spin – their authors never once say debris threatens these particular satellites – treat that as their own analysis and toss it out for lack of quals

#### Von Fange 17 takes this out – megaconstellations are in low LEO so no link and collision risk in high LEO is trivial

#### We’ll straight turn MacDonald 18 – it doesn’t say debris specifically causes war, it says space is inherently unstable due to lack of escalation barrier which means something else will inevitably trigger space war unless we withdraw due to Kessler

#### No space war – countries don’t want to