# Round 5 – NC

### 1NC – OFF

#### Interpretation: the affirmative may not specify a type of appropriation

#### ‘The’ indicates that appropriation is generic – no spec is allowed

Merriam Webster’s 19 Online Dictionary, https://www.merriam-webster.com/dictionary/the

4 -- used as a function word before a noun or a substantivized adjective to indicate reference to a group as a whole <the elite>

#### Violation: they spec asteroid mining

#### Standards

#### 1] Limits – they can spec infinite different types of appropriation like space mining, satellite orbit types, colonization, etc. This takes out functional limits – it’s impossible for me to research every possible combination of entities, governments, and appropriation.

#### 2] TVA solves – just read your aff as an advantage to a whole rez aff – we don’t stop them from reading new FWs, mechanisms or advantages. PICs aren’t aff offense – a] it’s ridiculous to say that neg potential abuse justifies the aff being non-T b] There’s only a small number of pics on this topic c] PICs incentivize them to write better affs that can generate solvency deficits to PICs

#### Topicality is a voting issue that should be evaluated through competing interpretations—it tells the negative what they do and do not have to prepare for. Reasonability is arbitrary and unpredictable, inviting a race to the bottom and we’ll win it links to our offense.

#### No RVIs—it’s your burden to be fair and T—same reason you don’t win for answering inherency or putting defense on a disad.

### 1NC – OFF

#### The plan removes the economic incentives for space exploration and asteroid mining—the mere threat is sufficient to kill investment.

Basulto 21 Basulto, Dominic. “How Property Rights in Outer Space May Lead to a Scramble to Exploit the Moon's Resources.” *The Washington Post*, WP Company, 5 Dec. 2021, https://www.washingtonpost.com/news/innovations/wp/2015/11/18/how-property-rights-in-outer-space-may-lead-to-a-scramble-to-exploit-the-moons-resources/.

What’s happening now, in essence, is a sea change in how we think about outer space. To convince private commercial space exploration companies to invest millions of dollars, there have to be economic incentives involved. In short, financial backers of these companies have to be able to realize a profit from their investments if innovation is going to happen. That’s the reality.

Richards cites the rights of fishing boats in international waters as an economic template for the SPACE Act, “The ships are owned by companies flying flags of nations under which laws they are bound: they have a right to peacefully fish in international waters that they don’t own; but they have a right of ownership of the fish once obtained.”

The fishing analogy is a useful one. It suggests that we’re simply extending the same economic principles used on Earth to the moon and beyond, not creating new principles. Seafaring nations are now spacefaring nations. Moon Express even refers to the moon as “the eighth continent,” suggesting that people should think about the moon the same way they think about the other seven continents on the planet. And Planetary Resources, an asteroid mining company, refers to the “off-planet economy.”

Throughout the annals of exploration, there have always been commercial incentives. Would the untapped economic potential of America have been possible without similar types of incentives? One example cited by backers of the SPACE Act is the Homestead Act of 1862, which paved the way for Americans to search for gold and timber. Governments they say, have an important role to play here by passing legislation that catalyzes, rather than stifles, growth and innovation.

For supporters of the SPACE Act, the year 2017 looms large. That’s exactly 50 years since the passage of the 1967 Outer Space Treaty. And it’s also the deadline for winning the $30 million Google Lunar X-PRIZE. If privately owned companies are going to be landing on the surface of the moon within the next 24 months, they are going to want assurances that their innovative efforts now are going to have an economic payoff later.

#### Space mining solves warming.

Duran 21, (Paloma Duran is a journalist and industry analyst at Mexico Business News, “Is Space Mining the Best Option to Face Climate Change?”), 11-03-21, Mexico Business News, https://mexicobusiness.news/mining/news/space-mining-best-option-face-climate-change // Debatedrills AS

Going to net zero means that more mining is needed. Experts have said that the current supply cannot support the necessary metals demand for the green transition. As a result, new mining alternatives have gained greater relevance, among them is **space mining.** Several countries, including Mexico, have shown their interest in this alternative, creating a new space race.

“The solar system can support a billion times greater industry than we have on Earth. When you go to vastly larger scales of civilization, beyond the scale that a planet can support, then the types of things that civilization can do are incomprehensible to us … We would be able to promote healthy societies all over the world at the same time that we would be reducing the environmental burden on the Earth,” said Dr. Phil Metzger, Planetary Scientist at the University of Central Florida.

Currently, there are several attempts to address global warming and transition to a net zero carbon economy. There has been an increasing interest in renewable energy and infrastructure, which has increased demand for various minerals, especially lithium, cobalt, nickel, copper and rare earth elements. However, according to experts, the world is close to entering a metals supercycle, **where demand will exceed available supply**, causing prices to skyrocket.

Consequently, the mining industry has sought alternatives to achieve the required supply. Options include recycling and improved mine waste management, sea mining and space mining. The latter is considered one of the alternatives with the greatest potential. However, a regulatory framework is still lacking and there is almost no experience in this regard.

Despite the lack of knowledge regarding space mining, it has become a very attractive option since the planet is running out of resources. While some people believe that land-based mining is cheaper than space mining, experts believe this may change in the long term. Furthermore, within the solar system there are countless bodies rich in minerals, ores and elements that will accelerate the fight against climate change.

“There will come a point when there is nothing left to mine on the surface, prompting mines to reach even further below. But even those resources are destined to run out and so we will aim toward ocean mining, which already has specific technologies that are being developed. Nevertheless, even those mines are limited as well. The mine of the future, which today may seem unlikely, will no longer be on our planet. There will be a time when space mining will be as common as an open leach mine,” Eder Lugo, Minerals Head at Siemens, told MBN.

**More than 150 million asteroids measuring approximately 100m are believed to be in the inner solar system alone.** In addition, astronomers have also identified abundant minerals near the Earth’s space and the Main Asteroid Belt. There are three main groups into which asteroids are divided: C- type, S- type, and M- type. The last two groups are the most abundant in minerals such as **gold, platinum, cobalt, zinc, tin, lead, indium, silver, copper and rare earth metals.**

#### Warming causes extinction

Kareiva 18, Peter, and Valerie Carranza. "Existential risk due to ecosystem collapse: Nature strikes back." Futures 102 (2018): 39-50. (Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA)

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (**climate change**, global **freshwater** cycle, **and** ocean **acidification**) do **pose existential risks**. This is **because of** intrinsic **positive feedback loops**, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield surprises. In addition, climate, freshwater, and ocean acidification are all **directly connected to** the provision of **food and water**, and **shortages** of food and water can **create conflict** and social unrest. Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields). Climate change intersects with freshwater resources because it is expected to exacerbate drought and water scarcity, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. **Ample clean water** is not a luxury—it **is essential for human survival**. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease. Finally, ocean acidification is linked to climate change because it is driven by CO2 emissions just as global warming is. With close to 20% of the world’s protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases storm frequency and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, coastal communities will be exposed to unprecedented storm surge—and may be ravaged by recurrent storms. A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition “rare” (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare extreme events because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people. 4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes **Humans** are remarkably ingenious, and **have adapted** to crises **throughout** their **history**. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). **However**, the many **stories** **of** human ingenuity **successfully** **addressing** **existential risks** such as global famine or extreme air pollution **represent** environmental c**hallenges that are** largely **linear**, have immediate consequences, **and operate without positive feedbacks**. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm. In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, **the Earth’s climate system is rife with positive feedback loops**. In particular, as CO2 increases and the climate warms, that **very warming can cause more CO2 release** which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios. Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002). Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that **forest fires will become more frequent** and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This **catastrophic fire** embodies the sorts of positive feedbacks and interacting factors that **could catch humanity off-guard and produce a** true **apocalyptic event.** Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming. Out of all types of feedbacks, water vapor and the ice-albedo feedbacks are the most clearly understood mechanisms. Losses in reflective snow and ice cover drive up surface temperatures, leading to even more melting of snow and ice cover—this is known as the ice-albedo feedback (Curry, Schramm, & Ebert, 1995). As snow and ice continue to melt at a more rapid pace, millions of people may be displaced by flooding risks as a consequence of sea level rise near coastal communities (Biermann & Boas, 2010; Myers, 2002; Nicholls et al., 2011). The water vapor feedback operates when warmer atmospheric conditions strengthen the saturation vapor pressure, which creates a warming effect given water vapor’s strong greenhouse gas properties (Manabe & Wetherald, 1967). Global warming tends to increase cloud formation because warmer temperatures lead to more evaporation of water into the atmosphere, and warmer temperature also allows the atmosphere to hold more water. The key question is whether this increase in clouds associated with global warming will result in a positive feedback loop (more warming) or a negative feedback loop (less warming). For decades, scientists have sought to answer this question and understand the net role clouds play in future climate projections (Schneider et al., 2017). Clouds are complex because they both have a cooling (reflecting incoming solar radiation) and warming (absorbing incoming solar radiation) effect (Lashof, DeAngelo, Saleska, & Harte, 1997). The type of cloud, altitude, and optical properties combine to determine how these countervailing effects balance out. Although still under debate, it appears that in most circumstances the cloud feedback is likely positive (Boucher et al., 2013). For example, models and observations show that increasing greenhouse gas concentrations reduces the low-level cloud fraction in the Northeast Pacific at decadal time scales. This then has a positive feedback effect and enhances climate warming since less solar radiation is reflected by the atmosphere (Clement, Burgman, & Norris, 2009). The key lesson from the long list of potentially positive feedbacks and their interactions is that **runaway climate change,** and runaway perturbations have to be taken as a serious possibility. Table 2 is just a snapshot of the type of feedbacks that have been identified (see Supplementary material for a more thorough explanation of positive feedback loops). However, this list is not exhaustive and the possibility of undiscovered positive feedbacks **portends** even greater **existential risks**. The many environmental crises humankind has previously averted (famine, ozone depletion, London fog, water pollution, etc.) were averted because of political will based on solid scientific understanding. We cannot count on complete scientific understanding when it comes to positive feedback loops and climate change.

### 1NC – OFF

#### CP: The appropriation of outer space through asteroid mining by private entities should be banned except for private entities registered within The Republic of India.

#### The Republic of India should limit the Indian Space Research Organization’s market share to 7.5%

### 1NC - OFF

#### Private appropriation for Indian private entities is key for investor confidence.

**Sen 20** [Nilanjan Sen, who is an experienced lawyer, specialising in International Law and Arbitration, 07-26-2020,Business Insider,https://www.businessinsider.in/science/space/news/the-fault-in-our-stars-indias-bid-at-privatizing-space/articleshow/77182064.cms, 12-7-2021 amrita]

With the creation of the Indian National Committee for Space Research (now ISRO) in 1962, India has been an active patron to mankind’s space efforts. From Aryabhata to Chandrayaan-2, India has launched 113 satellites, including the first privately built and funded satellite ExceedSat-1 which was launched from USA, as a part of Elon Musk’s Space X project Falcon-9. Up **until 2016, India’**s space activities **have been the exclusive domain of the State, however, the launch of the IRNSS-1H** in 2017 was the herald of a new era in India’s Space endeavours. The IRNSS-1H **marked the** beginning of **privatisation in this area** by being the first Indian satellite, to be designed in collaboration with the private parties. In the following year, the ExseedSat-1 was to become the first privately funded and built satellite launched in collaboration with the private Space X project. Interestingly, **up until now**, all **missions have been conducted for** purposes of research, reconnaissance as well as for augmenting communication systems since there wa**s a substantial State monopoly**. With the recent announcement ofthe creation of the Indian National Space Promotion and Authorization Centre or IN-SPACeby the Government of India as part of its atma nirbhar Bharat scheme, which aims at providing a “level playing field” and a supportive regulatory regime to allow Indian private enterprises to grow and carve their own niche in the so-called “fast-growing global space sector”**, India has** in fact **shown an inclination to capitalise** on the US strategy of opening up the avidly touted space “sector” to private participation. While the initiative **sounds exhilarating** and will definitely go a long way in defining India’s image as an emerging global technology powerhouse**, it is** extremely **difficult to fathom why private players, would** be willing to readily come forward and **invest billions,** by confining their activities for research purposes alone, **without any expectation of commercial gains** or simply, return on their investment. This is so because, matters concerning space and space exploration are subject of a special branch of customary international law, that are mainly centred around five treaties and eleven agreements. The most significant of these is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies or the Outer Space Treaty (OST) which India ratified in 1967, and which specifically lays down under Article I that outer space and space exploration including that on the moon and other celestial bodies, are to be carried out solely for, and in the interest of all countries, and that they are the province of all mankind. **Article II restricts** claims of sovereignty and national **appropriation** by any means whatsoever, Article VI **places international responsibility on all activities carried on by** governmental or by **non-governmental entities**, as well as mandates authorization and continuing supervision by the appropriate State Party. While there is considerable debate surrounding the applicability of the OST especially Article VI to private parties, since the US Supreme Court ‘s ruling in Medellin v Texas (2008) which held that Article VI is not self-executing in nature, regard must be had to the fact that these are domestic Court rulings and the fact that Space law is part of Customary International law which is affirmed by decades of State practise, cannot be denied, and neither can the fact that it is settled principle of international law that a State cannot, under the excuse of changes in domestic law, including subsequent Court rulings, renege from treaty obligations once ratified. In effect, the OST places strict checks upon the objectives behind exploring this uncharted territory by State and Non-State actors, far less allowing the possibility of even claiming rights of any kind. Moreover, it is no secret that **private corporations operate predominantly with** the object of individual gains **and** unless driven by the zeal to serve mankind and share profits with all countries, **chances are** that the **investments** made by private parties **will have little** to nil **returns,** far less any substantive protection**.**

#### Investor confidence is necessary for strong Indian private space-tech—that spills over, boosts Indian military heg, and turns case.

**Prasad 16** [Narayan Prasad has a Master of Space & Telecommunications Law, May 2016, National Academy of Legal Studies and Research University of Law Hyderabad, https://www.researchgate.net/publication/305402089\_A\_POLICY\_REVIEW\_TOWARDS\_THE\_DEVELOPMENT\_OF\_A\_SPACE\_INDUSTRY\_ECOSYSTEM\_IN\_INDIA/link/578dbd2908ae5c86c9a65d05/download, 12-8-2021 amrita]

As India ramps up its space defence capabilities, **lack of a mature space industrial base will** potentially **hurt** its ambitions**.** **India** counts among the top nations in the world in terms of government space investment 4 , but **is far behind** when it comes to **creating successful private industry** that is globally reputed. India’s space budget has increased in size (Figure 2) and is one of the largest space budgets in the world; however, the lack of an active space industry at turnkey level might have an immense opportunity cost for India in manufacturing satellites and launch vehicles to service the global market.5 This in effect is also due to absence of a single Indian company among the top space companies in the world (which in itself is an alarming statistic) that needs to be addressed urgently through policy push under the several grand schemes announced by the current government, such as ‘Make in India’ and ‘Digital India’. Most of **the apprehensions** for private investment in space industry **come from** the **requirements** of high capital investment, **and** the long gestation periods of space projects to get substantial Return on Investment (RoI) for the investors. These trends have been put aside by a new breed of space companies calling themselves ‘NewSpace’, which thrive on new business models of low cost access to space by capitalising on the advancements made in recent years in small satellite technology, consumer electronics, and computing power. Tiny modular satellites called ‘CubeSats’, weighing 1-4 kgs and costing under $100,000 have revolutionised the way space products and services are delivered to end users. The movement began in Europe and US simultaneously as a by-product of university and space agency collaborated research, but it was the US which took the lead in successfully commercialising these technologies developed in laboratories. Figure 3 shows the forecast of nano satellites weighing between 1-50 kg, which are scheduled to be launched during 2014-16 globally.6The high number arises from the fact that such nano satellites have short development timelines, and provide the necessary agility for satellite operators to develop large constellations that can cater to a larger customer base with high service quality. These NewSpace companies have ushered in widespread changes in the traditional satellite manufacturing and launch services industry, with companies like RocketLabs and Firefly Systems building new launchers cheaply using innovative techniques like additive manufacturing, to reduce the cost to orbit for these satellites. The impact of these companies has been felt within the space industry, as practices from these ‘NewSpace’companies have been adopted to keep the costs low and have a factory type approach in building systems in order to cater to the increasing demand. The NewSpace revolution has now led to companies such as Google, Virgin, and Qualcomm investing in small satellite-based communication technologies. India, however, has remained shielded from the rapid changes that have happened in the global space industry over the past decade. **ISRO** has been **slow to respond on** both **commercial** and academic **fronts,** with only a handful of university-level small satellite missions being launched during the same period, none of which could transform into a full-fledged commercial opportunity for the people involved in these projects. Lack of clarity on space policy in India is to blame, and partly the lack of willingness of DoS to take up additional responsibility of creating an ecosystem that disrupts their own traditional one, without any visible incentives. In the following sections, the need and motivation to develop a strong private industry ecosystem is detailed with necessary arguments. 1.2 Motivations to Develop a Private Industry Ecosystem in India Presently, **India has inherent advantages** over other countries **due** the availability of **skilled workforce**, a stable and business friendly **government,** positive investor climate and low cost of operations**.** Because India was an early mover in space technology, it is **poised to become a major space power albeit** slight policy push towards **greater commercialisation** of the industry. Table 1 shows the PESTLE analysis of India, in lieu of the motivation to develop a strong private space industry. The PESTLE analysis shows high suitability for services-based business models to operate out of India. The government’s encouragement for private space industry within the country to develop capacity and capability in pursuing space activities should thereby be directed to both the spectrums across the industry value chain. A focused space policy mandate can have multiple direct and fringe benefits to the government, especially in the defence sector which has been the current government’s area of interest through its ‘Make in India’ initiative. Some of the direct and indirect benefits of space technology include: Civilian and Commercial **Space industry has the potential to emerge as the third** technological **success** front following the successes of the Information Technology (IT) and Biotechnology in the country. Space **has an important role in** the overall **economic development** of the country **and** in the success of the government initiatives such as Digital India and Make in India. The development of the private space industry shall **aid in rural connectivity, e-governance and** setting up of **manufacturing facilities** base for products of high technology in India, creating headways in the overall emergence of the country at the world stage. The success of the space industry will enhance capacities within the country and complement the government-driven programme, which has been historically proven in advanced space faring countries such as the US. Capacity building in the private industry at a turnkey level for both upstream and downstream shall assist theeconomic development of the country by keeping up to the pace of requirement of the marketplace (e.g. Direct-to-Home TV, Broadband Internet), while reducing the inherent dependence on foreign assets. For example, as per a recent Comptroller and Auditor General (CAG) report, only one among the seven DTH providers is leasing transponder from the INSAT system**. The** primary **reason for this disparity is** the **slow pace** at which **ISRO has added** satellite transponders **to the commercial market.** The net effect is that the DTH providers are incurring higher transponder costs on foreign satellites when INSAT could have been an equally reliable, and more cost efficient, alternative. Space has its bearings over the imagination of youth and a strong emerging local industry can revolutionise the mindset of the national talent pool and can potentially aid in reversal of brain drain from the country. Public outreach, awareness, and STEM education are some of the intangible impact that investment in space technology produces. The capacity built up within the industry shall foster Business-to-Business (B2B) collaborations within the country and with enterprises across the globe and create also a strong focus on Business-to-Customer (B2C) applications which moves from the traditional Government-to-Government (G2G) flow of development of capacity and application of technology. The B2B, B2C ecosystem in the space industry has immense potential of tapping the much successful IT infrastructure of the country and extending the IT knowledge base to core software based applications of spacebased information such as Geographical Information Systems (GIS).It shall create an environment of technological innovation which when supported and encouraged can sustain to create a secondary source of development of high-tech hardware, software and applications for the government. An ecosystem of technological innovation in space technology has the potential of creating the next generation Small and Medium Scale Enterprises (SMEs) in India which shall 17 leverage the frugal nature of engineering and can create products and services independently for local and global requirements. Military **In the development of space technology with several dual use capabilities, there exists a case for the building up a sustained indigenous industry ecosystem that shall support the safety and security apparatus of the country**. These range **from development of capabilities in upstream** such as satellite, launch vehicle development **to** creating specific downstream applicationssuch as Automatic Identification of Ships (AIS), Electronic Intelligence (ELINIT), Communication Intelligence (COMMINT) and other Command, Control, Communications, Computers, Intelligence, Information, Surveillance, and Reconnaissance (C4I2SR) applications. Space Situational Awareness (SSA) is **the ability to view, understand and predict the physical location of natural and man-made objects orbiting the Earth. SSA is a prominent concern for both military and commercial systems, mainly because of the increasing military reliance on space assets**. The debris created by the anti-satellite testing by China in 2007 and the Kosmos-Iridium collision in 2009 has raised additional concerns about the safety of space assets. India currently relies on NASA’s data, and will operationalise its own system of Multi Object Tracking Radar (MOTR) by 2017.7 Meanwhile in the US, commercial operators have established the Space Data Association (SDA) for providing satellite operators reliable and efficient data for increased safety of satellite operations; this is in addition to the Department of Defense’s (DoD) own surveillance network. **The changing space security environment and the rising international concerns over the rapid growth of military assets in space makes space security one of the most important issues to address.** The need to have a space security policy is being 7 increasingly debated in India **and** the IDSA Task force in 2009 produced a report which attempted to conceptualise such a policy. However, there is reluctance to talk about use of space for national security needs including its military applications. Though efforts are being made to synchronize the activities of ISRO which is responsible for India’s civilian space programme and the Defence Research and Development Organisation (DRDO) which works on the use of space for national security needs, **the lack of a strong private industry that can meet heightened needs for such sophisticated missions hampers the progress in this direction,** apart from the bureaucratic delay that is normally associated when two high security government agencies interact. Capacity building within the space industry shall not only drive commercial applications, but shall aid the government in situations of emergencies (e.g. natural disasters, intelligence gathering for fighting against terrorism) and can eventually develop into a foundation that could potentially contribute as a part of a strong foreign policy drive. Studying the impact of space technology on civilian life is a complicated task, especially when it comes to quantifying the tangible and intangible impact. **The spill-over of space technology is in sectors as varied as defence, agriculture and education.** There exist many ways to show the impact of investment in space technology; some of them illustrated above. **Thus, the technological and knowledge backbone for space technology creates opportunities in the marketplace to create and explore commercial applications on a global scale, which** traditionally might not be the fundamental focus a governmental space agency, as well as **create multiple intangible impacts** across various sectors such as defence, education, agriculture, energy, transportation and environment**.** India has made substantial investment in its government space programme over the years, but it is **a sustained policy push towards investments in the private space industry ecosystem that will create commercial space applications**, complementing the societal benefits motivation currently being pursued by the government.

#### Indian space military heg checks and limits Chinese heg in the Indo-Pacific.

**Bommakanti 7-15-20**[Kartik Bommakanti is a Fellow with the Strategic Studies Programme. Kartik specialises in space military issues and his research is primarily centred on the Indo-Pacific region. He also works on emerging technologies as well as nuclear, conventional and sub-conventional coercion, particularly in the context of the Indian subcontinent and the role of great powers in the subcontinent’s strategic dynamics. He has published in peer reviewed journals., The enduring significance of space weapons for India, 7-15-2020,ORF,https://www.orfonline.org/expert-speak/the-enduring-significance-of-space-weapons-for-india/, 12-8-2021 amrita]

Regardless of the Americans protestations about the Russian test**, there are important underlying implications for India particularly in the context of Chinas’ growing space and counterspace capabilities as well as the repercussions that are likely to ensue if New Delhi were to pursue a weak response to Chinese space military power.** India will need a whole set of additional KEW tests. This author made the case for sea-launched and air launched KEWs in an extensive analysis. However, it was focused mostly on earth to space KEW systems and Directed Energy Weapons (DEWs). Confining India to the acquisition of KEWS and Directed Energy Weapons (DEWs) or cyber and electronic weapons can be expanded to include co-orbital KEWs. The Russian test also illustrates why co-orbital KEWs are also critical. Investment in additional KEW capabilities assumes considerable importance especially for India because of the long-term defence related challenges presented by the People’s Republic of China (PRC). **The ongoing boundary crisis should only lend greater urgency to India’s space weapons programme, simply because space assets in India’s inventory are vital to the prosecution of a potential military campaign whether on land, sea or air against the People’s Republic China (PRC).** The PRC is known to have developed the accoutrements necessary to conduct co-orbital test. For instance, in 2008 the Chinese BX-1 microsatellite while orbiting in close proximity to its mother satellite, executed a maneuver within 45 kilometers of the International Space Station (ISS). While BX-1 did not definitively establish a PRC co-orbital ASAT capability, it did indicate the PRC’s latent capability to conduct co-orbital kinetic tests and mount attacks against a potential adversary’ space assets. India must avoid what one leading Indian space analyst prior to India’s March 2019 KEW test observed: “To date, India’s interests in space have been restricted to using space assets for reconnaissance, navigation and communication. However, China’s ASAT test could influence India’s policies in the field of counter-space capabilities. To address the concerns raised at the regional and global level about this Chinese bravado, the best option for India could be to follow the disarmament and arms control route.” The statement is a non-sequitur, **while India has conducted only but one direct ascent KEW test, it has not matched China** in developing and executing non-destructive earth to space KEW tests, let alone fully match Chinese KEW, DEW, electronic and cyber weapon capabilities to target space assets. **Pursuing the arms control and disarmament route by India will be premature** in response to the PRC’s extensive development of space **and** counterspace capabilities**.** Reinforcing this point is that the PRC’s current and evolving space weapons programme deserve a sustained response. Bringing closure to the development of space and counterspace capabilities **would imply surrender that is completely unwarranted in light of Beijing’s recent and ongoing aggressiveness,** which India is evidently bearing the brunt. Very likely Beijing will be emboldened even more in deducing that India’s skittish response to its space weapons programme should be treated as weakness **and India subjected to further aggression, not just terrestrially, but equally in space.** The External Affairs Minister S. Jaishankar stated there is an imperative for India and China to achieve some “equilibrium”, although he never fully elaborated what exactly it would look like. However, if equilibrium or more precisely a stable balance of power is to be achieved in the Indo-Pacific, military power is crucial. **Space military power has grown in importance** from reconnaissance, navigation and communications to space weapons **and will be crucial to generating an equilibrium.** Ignoring the eventual deployment of weapons in space would be foolhardy for a state such as India when pitted against the PRC**. Consequently, space military power is a key constituent element in India’s capacity to contribute to the Asian balance of power**. Thus, **investing in a direct ascent and co-orbital KEWs as well as DEWS and cyber and electronic weapons geared for destroying or disabling spacecraft is crucial**. If India were to deprive itself of offensive space weapons to take Chinese or other enemy spacecraft, New Delhi would be putting itself at a considerable disadvantage by leaving it at the mercy of a wide variety of Chinese counterspace capabilities and measures against its Imagery Intelligence (IMINT), Communications (COMMINT), Electronic Intelligence (ELINT) and Synthetic Aperture Radar (SAR) satellites. Indeed, it is perplexing to see arguments that call for India to restrain itself, strive for disarmament and arms control when China makes no significant effort to do so beyond rhetorical commitments. The Russian co-orbital test has underlined the importance of space borne weapons despite entreaties for the non-weaponisation of space. The Modi government must see the emerging space military competition as an opportunity to bolster India’s counterspace capabilities. **It will help cement India as a major space military power and prevent Chinese hegemony over the Indo-Pacific.** Chinese hegemony on the other hand will become a certainty, if New Delhi lapses into self-doubt and remains unduly restrained in the testing, integration and deployment of space weapons.

#### China heg is revisionist and offensive-- in the Indo-Pacific that causes draw-in.

**Brands 19** [Hal Brands is the Henry A. Kissinger Distinguished Professor of Global Affairs at the Johns Hopkins School of Advanced International Studies, a senior fellow at the Center for Strategic and Budgetary Assessments. Zack Cooper is a research fellow at the American Enterprise Institute, an associate at Armitage International, and an adjunct assistant professor at Georgetown University, "After the Responsible Stakeholder, What? Debating America’s China Strategy." Texas National Security Review. Volume 2, Issue 2. February 2019k <https://tnsr.org/2019/02/after-the-responsible-stakeholder-what-debating-americas-china-strategy-2/> 12-10-2021 amrita]

The responsible-stakeholder paradigm offered a coherent “theory of victory”: It identified a desired outcome and employed all elements of American power to bring about that outcome. Over time, the strategy produced greater Sino-American cooperation on a range of issues, from counter-piracy to climate change. **It is increasingly clear, however, that the responsible-stakeholder strategy failed. Two of its core assumptions now appear misplaced: the idea that China’s intentions would become more benign over time, and the belief that Washington had the power to keep Chinese ambitions in check until that shift occurred.** What happened instead was that, as China rose, the Chinese Communist Party became more willing to use its newfound power in coercive and disruptive ways.3 Confounding Western hopes that China would liberalize, **the Chinese Communist Party embraced more repressive policies**, especially after Xi Jinping became general secretary in 2012. **Meanwhile, Beijing sought to control the Indo-Pacific region by** coercing its neighbors, undermining U.S. alliances, practicing mercantilist policies, steadily **increasing its presence** and influence in the South China Sea**, and modernizing its military. In the Indo-Pacific and beyond, moreover, China has engaged in a range of behaviors that challenge American interests: supporting authoritarian regimes, engaging in widespread corruption, pursuing predatory trade practices and major geo-economic projects meant to project Chinese influence further afield,** seeking to stifle international criticism of its human rights abuses, practicing massive intellectual property theft, and striving for technological dominance in critical emerging fields such as artificial intelligence.Recently, China’s confidence has been on display, with Xi stating in 2018 that “no one is in a position to dictate to the Chinese people,” after declaring in 2017 that China is ready to “take center stage in the world.”4 Rather than becoming a responsible stakeholder in a U.S.-led system, **China appears increasingly determined to compete with Washington for primacy in the Indo-Pacific and beyond.** These more assertive policies have been made possible by China’s surprisingly rapid growth**.** Between 1990 and 2016, China’s constant-dollar gross domestic product increased roughly twelve-fold and its military spending grew tenfold.5 The People’s Liberation Army rapidly developed the tools — anti-ship missiles, quiet submarines, advanced fighter aircraft, and integrated air defenses — needed to contest American supremacy in the Western Pacific and give China greater ability to shape events in its region and beyond. Surging national wealth also led to an explosion of Chinese trade, lending, and investment abroad, which enabled far more ambitious geo-economic statecraft**.** All told, **this expansion of Chinese national power is unprecedented in modern history.** It has dramatically narrowed the gap between China and the United States and made it far more difficult for Washington to shape Beijing’s behavior. No strategy can survive the invalidation of its central premises: By the end of the Obama presidency, the responsible-stakeholder concept was living on borrowed time. The Trump administration drove the final stake through the concept in its 2017 National Security Strategy. The document slammed Beijing for attempting to “shape a world antithetical to U.S. values and interests” and declared the failure of China’s “integration into the post-war international order.”6 In particular, **China’s behavior increasingly threatens three enduring U.S. interests. First, the United States seeks to maintain a favorable balance of power in the Indo-Pacific region** and to deter a military conflict — over Taiwan, Korea, or maritime Asia — that could undermine the regional order and cost American or allied lives. Second, **U.S. leaders have an interest in ensuring an open international economy conducive to American prosperity and competitiveness.** Third, **the United States seeks to preserve an international environment in which democracy, human rights, and the rule of law can** flourish, and it seeks to **strengthen** — where possible — the prevalence of those practices abroad. As Chinese power has grown and Chinese behavior has become more assertive, U.S. policymakers have come to see all three of these interests as being imperiled.

#### That goes nuclear-- extinction :/

**Hayes 18** [Peter John Hayes is the Executive Director of the Nautilus Institute for Security and Sustainability, a non-governmental policy-oriented research and advocacy group. He graduated from the University of Melbourne with a degree in History, and from University of California, Berkeley with a Ph.D. in energy and resources. #gobears, Trump and the Interregnum of American Nuclear Hegemony, November 8, 2018. [https://www.tandfonline.com/doi/full/10.1080/25751654.2018.1532525 recut 12-10-2021](https://www.tandfonline.com/doi/full/10.1080/25751654.2018.1532525%20recut%2012-10-2021) amrita]

During a post-hegemonic era, long-standing **nuclear alliances are** likely to be **replaced by** ad hoc nuclear **coalitions**, aligning and realigning around different congeries of threat and even actual nuclear wars, **with** much **higher levels of** uncertainty and **unpredictability** than was the case in the nuclear hegemonic system. There are a number of ways that this dynamic could play out during the interregnum, and these dynamics are likely to be inconsistent and contradictory. In some instances, the sheer momentum of past policy combined with bureaucratic inertia and the potency of political, military service and corporate interests, may ensure that residual aspects of the formerly hegemonic postures are adhered to even as formal nuclear alliances rupture. Even as they reach for the old anchors, these **states may be forced to adjust** and retrench **strategically, or start** to take their own nuclear risks by **making** increasingly explicit **nuclear threats** and deployments **against nuclear-armed adversaries** – as Japan has begun to do with reference to its “technological deterrent” since about 2012.9 This period could last for many years until and **when** nuclear **war breaks out** and leads to a post-nuclear war disorder; or **a** new, post-hegemonic strategic **framework is established** to manage and/or abolish nuclear threat. Under full-blown American nuclear hegemony, fewer states had nuclear weapons, the major nuclear weapons states entered into legally binding restraints on force levels and they learned from nuclear near-misses to promulgate rules of the road and tacit understandings. The lines drawn during full-blown collisions involving nuclear weapons were stark and concentrated the minds of leaders greatly. In a nuclear duel, it was clear that only one of two sides could fire first; the only question was which one. **Now, with nine** nuclear weapons **states, and conflicts** conceivably **involving** three, four or **more of them**, no matter how much leaders concentrate, **it will not be evident** who is aiming at who, **who may fire** first, and during a volley, who fired first and even who hit whom. In a highly proliferated world, **nuclear-armed states** may **feel driven to obtain larger** nuclear **forces** able **to deter multiple adversaries** at the same time, sufficient to conduct not only a few nuclear attacks but **configured to fight more than one** protracted **nuclear war at a time, especially in** nuclear **states torn apart by civil war** and post-nuclear attack reconstruction. The first time nuclear weapons are used since 1945 will be shocking, the second time, less so, the third time, the new normal.

## Case

### Circumvention/Solvency

#### Outer Space Laws are unclear – private corporations are still capable of escaping due to loopholes in the plan.

Green and Stark 17 [Christopher and Eda, “Outer Space Treaty and Beyond: Do Existing Space Laws Put an Astronomical Barrier to Private IP Rights in Space?”, JDSUPRA. 8 September 2020 https://www.jdsupra.com/legalnews/outer-space-treaty-beyond-do-existing-44028/] //DebateDrills LC

Our limited body of space law provides little guidance. The first international treaty, the “Outer Space Treaty,” was signed by the U.S., Russia, and the U.K. in 1967, quickly followed by the Rescue Agreement. Over the next two decades, three other treaties—the Liability Convention, the Registration Convention, and the Moon Agreement—were also signed by these nations, with most countries following in their footsteps.[3] But after that rapid succession of international treaties, there have since been few others. These five documents form the basis of the international space law we have today, but none address the issue of [intellectual property rights in space](https://www.fr.com/fish-litigation/ip-rights-outer-space/). Rather, upon inspection, it appears that the stated purpose of these treaties may be antithetical to intellectual property protection.

The “Outer Space Treaty” espouses communal themes in characterizing space as the “province of all mankind,” the “common heritage of mankind” and to the “benefit of all countries.”[4] Unsurprisingly, Article II of the Outer Space Treaty prohibits any appropriation of areas in space, keeping in line with its principle of communal property.[5] On the other hand, patents are fundamentally territorial and grant monopoly rights for a period of time. Applied to space, it is unclear just what is open for patent protections.

For example, can private companies patent orbital patterns of satellites? Currently, companies may patent the technology or design of satellites that stay in a particular orbit, even if not the orbital pattern itself.[6] The practical implications of this are significant, especially with the advent of satellite constellations. If particular satellite technologies, and, indirectly, their orbital patterns, are patentable, then a significant portion of space may be occupied by one satellite constellation, i.e. one company alone.[7] Does this private apportionment of space run counter to our notions of sharing space? Some argue that the Outer Space Treaty only bans sovereign appropriation and does not limit private entities from exerting claims. Others counter that private property rights flow from sovereign property claims, so the former is meaningless without the latter.[8] So the question remains, can the stated goals of sharing outer space be reconciled with the proprietary nature of patents?

Our current corpus of space treaties comes from a period of history when space exploration was undertaken primarily by governments rather than private actors. The cooperative goals were likely a reaction to the time, as the world was coming out of a charged space race. The silence of these space treaties on intellectual property rights presents an opportunity for modern-day agreements to provide patent protections for private companies. Without robust international agreement on patents for space, we may even see less international cooperation as companies refuse to divulge their discoveries.[9] Now, as more and more private companies enter space exploration and carry the torch of innovation, it is more important than ever to strike a balance between sharing our “common heritage” and providing patent protections that incentivize invention.[10]

#### The affirmative has no enforcement mechanism – private corporations can just circumvent since they have the funding to launch rockets on their own.

Sheetz 21 [Michael, “Elon Musk’s SpaceX raised about $850 million, jumping valuation to about $74 billion”, CNBC. 16 February 2021. https://www.cnbc.com/2021/02/16/elon-musks-spacex-raised-850-million-at-419point99-a-share.html] //DebateDrills LC

SpaceX completed another monster equity funding round of $850 million last week, people familiar with the financing told CNBC, sending the company’s valuation skyrocketing to about $74 billion.

The company raised the new funds at $419.99 a share, those people said — or just 1 cent below the $420 price that [Elon Musk](https://www.cnbc.com/elon-musk/) [made infamous in 2018](https://www.cnbc.com/2018/09/28/sec-says-elon-musk-at-tesla-chose-420-price-as-pot-reference.html) when he declared he had “funding secured” to take [Tesla](https://www.cnbc.com/quotes/TSLA) private at that price.

The latest round also represents a jump of about 60% in the company’s valuation from its previous round in August, when [SpaceX raised near $2 billion at a $46 billion valuation](https://www.cnbc.com/2020/10/14/tesla-investor-ron-baron-spacex-has-a-chance-to-be-just-as-large.html).

SpaceX did not immediately respond to CNBC’s request for comment. In addition to SpaceX further building a war chest for its ambitious plans, company insiders and existing investors were able to sell $750 million in a secondary transaction, one of the people said.

The people spoke on condition of anonymity because SpaceX is not a publicly traded company and the fundraising talks were private. SpaceX raised only a portion of the funding available in the marketplace, with one person telling CNBC that the company received “insane demand” of about $6 billion in offers over the course of just three days.

### US/Russia

#### This whole advantage is wrong – Taichman 21 doesn’t mention Asteroid mining at all and Russia is just upset over US space resource claims, they are upset about a lot of things but doesn’t mean they will destroy the world

#### China and Russia are not friends – jingoism and nationalism leads Chinese official to even claim Vladivostok and central Asia heg battle

Akshay Narang 21 [Political Analyst, Historian] 12-19-2021 https://tfipost.com/2020/07/this-is-our-land-china-now-claims-russias-vladivostok-as-part-of-its-territory/ 'This is our land,' China now claims Russia’s Vladivostok as part of its territory TFIPOST, accessed 12-18-2021 //GS

China doesn’t want friends. It doesn’t want peaceful borders either. The only thing that China wants is territory- more and more of it. An expansionist China is already claiming maritime territory and islands within the territorial waters and Exclusive Economic Zones (EEZs) of other countries in the South China Sea and Japanese islands in the East China Sea.

In the Himalayas, China is encroaching Nepalese villages and trying to push the LAC further west along the Indo-Tibetan border in Ladakh. And now China is claiming territory of another neighbour- Russia.

At the root of China’s fresh claims in Russian territory is a video to celebrate the 160th anniversary of Vladivostok posted by the Russian Embassy on the Chinese social media website Weibo.

But the land mafia of a country that China has become, it objected instantly to the video posted by Russian Embassy. Chinese diplomats, journalists and jingoistic social media users soon went overboard.

Chinese internet users, including diplomats and officials, claim that Vladivostok used to be a part of China. They claim it was Qing’s Manchurian homeland but was annexed by the Russian empire in 1860 after China was defeated by the British and the French during the Second Opium war.

#### US hegemony is dead – there’s no coming back

* COVID, economic downturns, nationalistic politics, security internationally
* Rise in other great powers to rival
* Weaker states can seek alternatives to US support
* Rise in right-wing networks vs liberal policies

Cooley and Nexon 20 (Alexander Cooley is the Claire Tow Professor of Political Science at Barnard College and Director of Columbia University’s Harriman Institute, Daniel H. Nexon is an Associate Professor in the Department of Government and at the Edmund A. Walsh School of Foreign Service at Georgetown University, 6/9/2020, Foreign Affairs, “How Hegemony Ends”, <https://www.foreignaffairs.com/articles/united-states/2020-06-09/how-hegemony-ends>) //EG

Multiple signs point to a crisis in global order. The uncoordinated international response to the COVID-19 pandemic, the resulting economic downturns, the resurgence of nationalist politics, and the hardening of state borders all seem to herald the emergence of a less cooperative and more fragile international system. According to many observers, these developments underscore the dangers of U.S. President Donald Trump’s “America first” policies and his retreat from global leadership.

Even before the pandemic, Trump routinely criticized the value of alliances and institutions such as NATO, supported the breakup of the European Union, withdrew from a host of international agreements and organizations, and pandered to autocrats such as Russian President Vladimir Putin and the North Korean leader Kim Jong Un. He has questioned the merits of placing liberal values such as democracy and human rights at the heart of foreign policy. Trump’s clear preference for zero-sum, transactional politics further supports the notion that the United States is abandoning its commitment to promoting a liberal international order.

Some analysts believe that the United States can still turn this around, by restoring the strategies by which it, from the end of World War II to the aftermath of the Cold War, built and sustained a successful international order. If a post-Trump United States could reclaim the responsibilities of global power, then this era—including the pandemic that will define it—could stand as a temporary aberration rather than a step on the way to permanent disarray.

After all, predictions of American decline and a shift in international order are far from new—and they have been consistently wrong. In the middle of the 1980s, many analysts believed that U.S. leadership was on the way out. The Bretton Woods system had collapsed in the 1970s; the United States faced increasing competition from European and East Asian economies, notably West Germany and Japan; and the Soviet Union looked like an enduring feature of world politics. By the end of 1991, however, the Soviet Union had formally dissolved, Japan was entering its “lost decade” of economic stagnation, and the expensive task of integration consumed a reunified Germany. The United States experienced a decade of booming technological innovation and unexpectedly high economic growth. The result was what many hailed as a “unipolar moment” of American hegemony.

But this time really is different. The very forces that made U.S. hegemony so durable before are today driving its dissolution. Three developments enabled the post–Cold War U.S.-led order. First, with the defeat of communism, the United States faced no major global ideological project that could rival its own. Second, with the disintegration of the Soviet Union and its accompanying infrastructure of institutions and partnerships, weaker states lacked significant alternatives to the United States and its Western allies when it came to securing military, economic, and political support. And third, transnational activists and movements were spreading liberal values and norms that bolstered the liberal order.

Today, those same dynamics have turned against the United States: a vicious cycle that erodes U.S. power has replaced the virtuous cycles that once reinforced it. With the rise of great powers such as China and Russia, autocratic and illiberal projects rival the U.S.-led liberal international system. Developing countries—and even many developed ones—can seek alternative patrons rather than remain dependent on Western largess and support. And illiberal, often right-wing transnational networks are pressing against the norms and pieties of the liberal international order that once seemed so implacable. In short, U.S. global leadership is not simply in retreat; it is unraveling. And the decline is not cyclical but permanent.

#### Multipolarity is inevitable --- trying to preserve delusions of unipolarity causes US military lashout and conflict, especially post-Trump

Mearsheimer and Bacevich 18 John Mearsheimer and Andrew Bacevich. Mearsheimer is an American political scientist. He is the R. Wendell Harrison Distinguished Service Professor at the University of Chicago. Bacevich is an American historian specializing in international relations, security studies, American foreign policy, and American diplomatic and military history. They were interviewed by Derek Davison, a Washington-based researcher and writer on international affairs and American politics. “Mearsheimer And Bacevich On The Future Of American Foreign Policy.” Lobe Log. January 23, 2018. https://lobelog.com/mearsheimer-and-bacevich-on-the-future-of-american-foreign-policy/

John Mearsheimer: One change that’s taking place in international politics that Trump has no control over but that will affect his presidency more and more over time—and which is reflected in the NSS—is the rise of China and the resurrection of Russian power. This change in the balance of power has created a situation where we’re moving away from unipolarity and toward multipolarity. If you look at the National Security Strategy (NSS) carefully, it trumpets the fact that great power politics is back, and it’s not just Iran and North Korea that are the principle threats the United States needs to worry about—it’s also China and Russia. It seems clear to me that the Trump administration has its gunsights on both China and Russia and will devote an enormous amount of defense resources to dealing with those two countries. Over time, I think this will mean a fundamental change in our foreign policy, and we will end up focusing more on East Asia and less on the greater Middle East.

Andrew Bacevich: Events since the end of the Cold War have demolished the notion that we live in a unipolar world dominated by the United States. I don’t think that was ever a plausible proposition, but if we look at what has actually happened over the past 30 years or so, the folly becomes fully evident. That said, it’s not clear to me that people in Washington are willing to acknowledge how wrong they were. So when you reference things like the rise of China, the big question is whether the United States is willing to accept the fact that ours is a multipolar world, with fostering stability in that world the task at hand. Or are people in Washington intent on clinging to delusions of unipolarity, the task at hand then being to prevent China’s rise.

Mearsheimer: During the so-called “unipolar moment,” the United States thought it was so powerful and so smart that it could basically run the world. It could do regime change and create more and more liberal democracies, and in the process would be seen as a benign hegemon. And of course all of this social engineering would lead to a much more peaceful world. But now, as we move into multipolarity, it’s becoming apparent that the problems we face are growing in number and are actually much more serious than they have been over the past 25 years. In other words, it’s not just the Middle East, terrorism, and proliferation that matter, now we also have to worry about great power politics.

I think that most people in Washington believe that the United States is so powerful, and can be so effective in the world, that it can deal with Russia and China and these other problems all at the same time. I don’t think that the American foreign policy establishment has a good sense of the limits of power. They don’t understand that there are limits to what you can do with the military force we have, and that given the rise of China and the problems we have with Russia the United States is going to have to prioritize. I don’t think that most American policymakers and pundits think in terms of prioritizing and making hard choices. They continue to think, for reasons that baffle me, that the United States can go around the world and perform all of these missions simultaneously, and be successful to boot, even though we have an abysmal track record in recent years.

Bacevich: I’m also baffled. The explanation that I keep coming back to is American exceptionalism, this sense of being chosen. I don’t understand the durability of that claim given the actual consequences of trying to implement it, particularly over the last few years. Just focus on the Middle East. What have we learned since Ronald Reagan’s de factointervention on behalf of Saddam Hussein in the Iran-Iraq War? What has the political establishment learned since then from our various interventions in that region? I think we’ve learned nothing, and therefore we continue to blunder on. This most recent announcement of maintaining U.S. troops in Syria: for how long? It suggests yet another open-ended military commitment, and yet it elicits only yawns from the media and the American people.

Mearsheimer: If you look at Afghanistan, which is another example, Candidate Trump basically said that he was going to pull the troops out of Afghanistan, because it is a hopeless cause—which of course it is. But what did he do when he entered the White House? He upped the ante in Afghanistan, even though we have no strategy for winning that war and there is no end in sight.

With regard to Syria, the United States helped create the mess there, starting in the summer of 2011, when the Obama administration decided it was time to overthrow Assad. This policy failed and a horrendous civil war resulted. Moreover, the Islamic State [ISIS or IS] moved into Syria and occupied a huge chunk of Syrian territory, which forced the United States to go to war in Syria. And now the Trump administration has decided to stay in Syria for the long term to help shape the political outcome in that country. Despite Trump’s past rhetoric about getting out of the business of nation-building, he’s decided to do it in both Afghanistan and Syria. It’s hard to believe, but we’re going to try to decide who should run Syria, what its political system should look like, what its foreign policy should be. We’ve tried to do this in numerous other countries over the past few decades, and we’ve had one failure after another. Bacevich: To make matters worse, this president—and again, we should remind ourselves of the contempt he expressed for the foreign-policy establishment—has decided to take sides in the rivalry between Saudi Arabia and Iran. Again, it baffles me—not just Trump’s decision to do so and his romance with Saudi royals —but the fact that that kind of uninformed inclination from an ignorant president doesn’t elicit any serious pushback in Washington. We blunder on.

### Collisions

#### There’s no space debris impact

Park 18

Ye Joo Park, citing NASA studies on orbital debris, How Dangerous is Space Debris?, Research Association for Interdisciplinary Studies, RAIS Conference Proceedings, November 19-20, 2018, DOI: 10.5281/zenodo.1572516, <https://ssrn.com/abstract=3303541>

Other factors to consider concerning collisions in Space

While it’s true that there are thousands of space objects directly above Earth in an 800-kilometer band, space is so vast that it’s helpful to pause for a moment and reflect... in the area directly above the entire continental U.S., there are typically only three or four items orbiting above 3.1 million square miles. Therefore, the likelihood of collisions between satellites, spacecraft and orbiting objects is very small (NASA 2018).

In fact, in 2013 it was reported that the probability of a collision between an orbiting asset and space debris larger than 1 cm (0.4in.) will be once every 1.5-2 years, according to the Head of the Russian Hall/ History of Space Debris 8 Figure 5 [NASA] Space Agency. This compares with a 2010 estimate giving the likelihood of once every 5 years (Sorokin 2013).

The Feasibility of Practically Reducing Space Debris

Reducing orbital debris is incredibly difficult. Therefore, the most important action that space experts and policy makers currently recommend is to prevent the unnecessary creation of additional orbital debris. This can be done through prudent vehicle design and operations ((UNOOSA 2014).

The International Academy of Astronautics or IAA is a significant, global organization of scientists and space experts from many countries who meet regularly to discuss the importance of space debris as a policy issue. The subject-matter experts of the IAA published their fifth update Situation Report on Space Debris in August 2017 (Bonnal and McKnight 2017). In the executive summary, the IAA reported that if an orbiting satellite impacts with small bits of debris - even as small as 5 mm - the result will be grave, e.g. the collision would likely disrupt or terminate a satellite’s operations (Bonnal and McKnight 2017, 5).

The serious warnings expressed in this conclusion are offset by the positive findings of the IAA that there has been a reduction of the space debris created from the two extraordinary satellite destruction events (2007 and 2009) cited earlier in this paper. According to the IAF report, a large amount of debris from the satellite explosions were frictionally burned when reaching the Earth’s atmosphere after gradually sinking due to the scientific principle of atmospheric drag (in the science of Physics), which is a deterioration in the strength of an orbit because of an object hitting gas molecules in space. Small bits of space junk sink as the orbit gets weaker... then they burn. This is a positive trend “for keeping the short-term collision hazard under control at the lower altitudes (i.e., less than 650 km)” (Bonnal and McKnight 2017, 7).

#### **Military space satelties have already been broken up by space debris – their escalation scenario is absurd**

Wall 21’ Home News Spaceflight Space collision: Chinese satellite got whacked by hunk of Russian rocket in March By Mike Wall published August 17, 2021 We may see more and more of these orbital smashups in the coming years. //RD Debatedrills

Yunhai 1-02's wounds are not self-inflicted. In March, the U.S. Space Force's 18th Space Control Squadron (18SPCS) reported the breakup of Yunhai 1-02, a Chinese military satellite that launched in September 2019. It was unclear at the time whether the spacecraft had suffered some sort of failure — an explosion in its propulsion system, perhaps — or if it had collided with something in orbit. We now know that the latter explanation is correct, thanks to some sleuthing by astrophysicist and satellite tracker Jonathan McDowell, who's based at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. Sponsored Links Cupertino: Startup Is Changing the Way People Retire SmartAsset Related: The worst space debris events of all time Click here for more Space.com videos... CLOSE On Saturday (Aug. 14), McDowell spotted an update in the Space-Track.org catalog, which the 18SPCS makes available to registered users. The update included "a note for object 48078, 1996-051Q: 'Collided with satellite.' This is a new kind of comment entry — haven't seen such a comment for any other satellites before," McDowell tweeted on Saturday. He dove into the tracking data to learn more. McDowell found that Object 48078 is a small piece of space junk — likely a piece of debris between 4 inches and 20 inches wide (10 to 50 centimeters) — from the Zenit-2 rocket that launched Russia's Tselina-2 spy satellite in September 1996. Eight pieces of debris originating from that rocket have been tracked over the years, he said, but Object 48078 has just a single set of orbital data, which was collected in March of this year. "I conclude that they probably only spotted it in the data after it collided with something, and that's why there's only one set of orbital data. So the collision probably happened shortly after the epoch of the orbit. What did it hit?" McDowell wrote in another Saturday tweet. Yunhai 1-02, which broke up on March 18, was "the obvious candidate," he added — and the data showed that it was indeed the victim. Yunhai 1-02 and Object 48078 passed within 0.6 miles (1 kilometer) of each other — within the margin of error of the tracking system — at 3:41 a.m. EDT (0741 GMT) on March 18, "exactly when 18SPCS reports Yunhai broke up," McDowell wrote in another tweet. Thirty-seven debris objects spawned by the smashup have been detected to date, and there are likely others that remain untracked, he added. Despite the damage, Yunhai 1-02 apparently survived the violent encounter, which occurred at an altitude of 485 miles (780 kilometers). Amateur radio trackers have continued to detect signals from the satellite, McDowell said, though it's unclear if Yunhai 1-02 can still do the job it was built to perform (whatever that may be). Space Junk Clean Up: 7 Wild Ways to Destroy Orbital Debris Click here for more Space.com videos... McDowell described the incident as the first major confirmed orbital collision since February 2009, when the defunct Russian military spacecraft Kosmos-2251 slammed into Iridium 33, an operational communications satellite. That smashup generated a whopping 1,800 pieces of trackable debris by the following October. However, we may be entering an era of increasingly frequent space collisions — especially smashups like the Yunhai incident, in which a relatively small piece of debris wounds but doesn't kill a satellite. Humanity keeps launching more and more spacecraft, after all, at an ever-increasing pace. "Collisions are proportional to the square of the number of things in orbit," McDowell told Space.com. "That is to say, if you have 10 times as many satellites, you're going to get 100 times as many collisions. So, as the traffic density goes up, collisions are going to go from being a minor constituent of the space junk problem to being the major constituent. That's just math." We may reach that point in just a few years, he added. The nightmare scenario that satellite operators and exploration advocates want to avoid is the Kessler syndrome — a cascading series of collisions that could clutter Earth orbit with so much debris that our use of, and travel through, the final frontier is significantly hampered. RELATED STORIES — Who's going to fix the space junk problem? — Space junk removal is not going smoothly — The world needs space junk standards, G7 nations agree Our current space junk problem is not that severe, but the Yunhai event could be a warning sign of sorts. It's possible, McDowell said, that Object 48078 was knocked off the Zenit-2 rocket by a collision, so the March smashup may be part of a cascade. "That's all very worrying and is an additional reason why you want to remove these big objects from orbit,"

#### Current efforts to remove space debris check.

Weiner 21 (Weiner, Chloee. “New Effort to Clean up Space Junk Reaches Orbit.” NPR, NPR, 22 Mar. 2021, [www.npr.org/2021/03/21/979815691/new-effort-to-clean-up-space-junk-prepares-to-launch.)// DebateDrills](http://www.npr.org/2021/03/21/979815691/new-effort-to-clean-up-space-junk-prepares-to-launch.)//DD)  AY

A demonstration mission to test an idea to clean up space debris launched Monday morning local time from the Baikonur Cosmodrome in Kazakhstan. Known as ELSA-d, the mission will exhibit technology that could help capture space junk, the millions of pieces of orbital debris that float above Earth. The more than 8,000 metric tons of debris threaten the loss of services we rely on for Earth-bound life, including weather forecasting, telecommunications and GPS systems. The spacecraft works by attempting to attach itself to dead satellites and pushing them toward Earth to burn up in the atmosphere. ELSA-d, which stands for End-of-Life Services by Astroscale, will be carried out by a "servicer satellite" and a "client satellite" that launched together, according to Astroscale, the Japan-based company behind the mission. Using a magnetic docking technology, the servicer will release and try to "rendezvous" with the client, which will act as a mock piece of space junk. The mission, which will be run from the U.K., will carry out this catch and release process repeatedly over the course of six months. The goal is to prove the servicer satellite's ability to track down and dock with its target in varying levels of complexity. The spacecraft is not designed to capture dead satellites already in orbit, but rather future satellites that would be launched with compatible docking plates on them. Space junk has been a growing problem for years as human-made objects such as old satellites and spacecraft parts build up in low Earth orbit until they decay, deorbit, explode or collide with other objects, fragmenting into smaller pieces of waste. In 2019, for example, India blew apart one of its satellites orbiting Earth, creating hundreds of pieces of debris that threatened to collide with the International Space Station. According to a recent report by NASA, at least 26,000 of the millions of pieces of space junk are the size of a softball. Orbiting along at 17,500 mph, they could "destroy a satellite on impact." More than 500,000 pieces are a "mission-ending threat" because of their ability to impact protective systems, fuel tanks and spacecraft cabins. And the most common debris, more than 100 million pieces, is the size of a grain of salt and could puncture a spacesuit, "amplifying the risk of catastrophic collisions to spacecraft and crew," the report said. According to NASA, cleaning up space — and addressing the risks associated with debris — depend on preventing the accumulation of more waste and actively removing it. The development of other cleanup technologies has been underway for years. In 2016, Japan's space agency sent a 700-meter tether into space to try to slow down and redirect space junk. In 2018, a device called RemoveDebris successfully cast a net around a dummy satellite. The European Space Agency also plans to send a self-destructing robot into orbit in 2025, which the organization's former director general has referred to as a space "vacuum cleaner." These efforts could prove increasingly important as private space ventures like SpaceX continue to clutter low Earth orbit with a "mega-constellation" of satellites.