### 1NC -- OFF

#### **Interp: aff’s must not regulate privatization of celestial bodies**

New World Encyclopedia ND, "Outer space," No Publication, https://www.newworldencyclopedia.org/entry/outer\_space

Outer space (often called space) consists of the relatively empty regions of the universe outside the atmospheres of celestial bodies. Outer space is used to distinguish it from airspace and terrestrial locations. There is no clear boundary between Earth's atmosphere and space, as the density of the atmosphere gradually decreases as the altitude increases.

#### Violation: they don’t;

#### Asteroids are celestial bodies

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

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

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

#### Ground: they kill neg ground allowing aff’s that effect planets kills neg ground through allowing aff’s to no link out of satellite and other specific DA’s

#### Predictability: literature base concludes neg – most people define outer space as in between athmospheres– including earth guts predictability for topic lit

Voter for fairness and education

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

### 1NC – OFF

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

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

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

#### **Mining is k2 long term colonies**

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

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

#### Getting off the rock is possible --- extinction guaranteed otherwise

Everett 16 [Sean, CEO of Prome Biological Intelligence, a global biotechnology company, editor of Medium’s news outlet dedicated to space colonialization titled “The Mission”, BS Mathematics & Actuarial Science, MBA from UChicago, 2016, “Humanity’s Extinction Event Is Coming” https://medium.com/the-mission/humanitys-extinction-event-is-coming-c0f84f1803f]

But the reality is that an asteroid impact, a change in our magnetic field, or the rising temperature of Earth’s climate are all events that we currently cannot escape. There is no back-up plan. We are, for better or worse, tied to the fate of this planet. As history has shown, that’s not a good fate to be tied to. In fact on September 7, 2016 a 30-foot asteroid flew between the Earth and the Moon. Our most powerful instruments only detected it with two days notice. Two days. If the asteroid was only 1000-foot wide, it would destroy all human life and we’d have no back-up to get out of it. Even the White House is worried about it. Five, yes five, major extinction events have occurred on our planet that we know about. We’re due for another. And when that happens, what’s our alternative? You can’t move to another house. You can’t buy survival, even with a billion dollars in the bank. The only way out, is up. We must find a way to become multi-planetary if we want to save humanity, your family, and yes, even yourself. Only this can restore the honor we seemed to have lost from the brave days of the 60s, while also ensuring our survival. It’s for the species, folks. And as a species, we have not allowed ourselves the opportunity to blast off for the stars. Only the space race in the 60s when we were afraid enough of a self-inflicted global extinction event (read: nuclear) that we put forth the funding required to launch into orbit and onto our moon. We didn’t have calculators back then, and now we have supercomputers in our pocket, but no one is allowed out of our atmosphere, save for a few communication and spy satellites. Doesn’t that make you mad? It’s not some oppressive government that tells us no. It’s us. We pay our taxes. We elect leaders. Those leaders choose Defense as the primary budget line item, but forget about defending against the forthcoming apocalypse. Funding for NASA in the United States has decreased from 4% of the national budget in the 60s to about 0.5% from 2010 onwards. That’s just the money side. But in order to move past this threshold from our home planet to space and then onto other planets, we need to do two things: Travel there. Survive. Luckily, we can simplify the problem of passing this barrier by sending machines in our place. Like TARS from Interstellar, they can go places humans cannot and explore the environment for habitability and resources, even in particularly hostile conditions. Maybe not black hole hostile, but definitely Mars hostile, as the Curiosity Rover has shown. Only now, with a few bold, private startups are we beginning to see a re-emergence of the space industry. We are about to pass a few very important tests that allow us to explore and visit the cosmos. The first is launching physical things into space. This is the catalyst that will jump start a new space race. Prices of sending cargo are falling dramatically, down to nearly $500 per pound of payload with SpaceX’s Falcon 9 heavy re-usable rocket. Note that the re-usable part is key. We can’t throw away our “space car” every time we Uber it. And once that becomes standard and cost-optimized we might be able to get that down to $10 per pound. Imagine what could happen when it costs the same amount to ship something across town as it does into space. The second, and this is just as important, is the wave of autonomous machines. Tesla has popularized the notion of self-driving cars. SpaceX lands their rocket onto a small barge in the ocean autonomously. Companies are buying startups in the space. Self-driving will be our gift, our talisman, on the quest to save the species by becoming multi-planetary. II. Shipping Ourselves to Space The graph below is from the Founders Fund manifesto, showing the decreasing cost of launching something into space. It begins with the 1960s US-versus-Russia space race and extends to the present day SpaceX-versus-Blue Origin reusable rocket race. The cheapest method we have today is SpaceX’s Falcon series rockets. With the Falcon 9 Heavy, it’s predicted launching cargo into space will be cheaper than ever before, at $750 per pound of payload delivered to low earth orbit (LOE)on an expendable rocket. You have to note here, however, that these statistics are as cheap as possible. It costs more to deliver payload on a non-reusable rocket, and on something that’s further out than LEO, like geosynchronous orbit, or to Mars. For example, based on SpaceX’s published pricing, it would be at least 4x more expensive to deliver far less cargo to Mars. So what happens when we reduce that cost to $10 per pound? Namely, an explosion of startups, much like iOS. Instead of pushing to production for your continuously deployed web and mobile app, we will see future developers push to production by deploying physical things into space. “STAGE” takes on an entirely new meaning for software developers when it means your automated regression tests fail, it could blow up a rocket and hurt people on board. That’s why SpaceX and Blue Origins exist. To make this continuous-deployment-to-space process as cheap and fast as possible. By Elon’s calculations, every 15 minutes. III. Self-Driving Space Explorers The most successful products for space, at least in the beginning, will make money by pushing this stuff into orbit. Things like science experiments and new 3D printers. A company called Made in Space creates a number of these products, including the empty box you see below used for sending things up with Blue Origin. The box shown in gray is a specialized 3D printer that works in zero gravity. Remember how most 3D printers work. It squeezes out a single layer of liquid ooze, and then another, over and over again until it builds up enough vertically that it creates an object. This can be simple plastic or more esoteroic metals. But when you’re “dripping” something, held down in place by gravity, the entire process has to be re-imagined for space. Things in zero-G would just float away. Enter these chaps. There’s also the very real need for oxygen, food, water, and shelter from the harsh elements. Funny how we will end up recreating Maslow’s Heirarchy in every new voyage or planetoid we want to colonize. And space mining is off to the races with the recent announcement of Deep Space Industry’s Prospector-1: Their vision is to extract water from asteroids and use the chemical components to hydrate us, but also as oxygen (breathing) and hydrogen (fuel). To do that, you have to identify candidate asteroids, physically get to them, land and attach, and then do surveying, prospecting, and extraction. In short, you’re going to need some level of self-driving capabilities to make this happen. And wouldn’t it be nice if it “just worked” right out of the box. Unfortunately, in space you don’t have fleets of these space craft, millions of miles of training data, maps, or an internet connection to the cloud so how the heck are deep learning algorithms going to work? I don’t think they will. And that’s what I believe we need a better approach

#### Space colonization solves extinction.

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

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

### 1NC – OFF

#### States ought to establish or expand an international public trust obligation towards celestial protection as a form of multilateral governance.

#### Counterplan solves global space sustainability.

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

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

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

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

Conclusion

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

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

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

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

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

# Case

## Mining

#### No miscalc from satellite disruptions

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

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

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

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

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

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

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

#### Kessler is inevitable

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

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

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

When Space Weather Becomes A Hurricane

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

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

#### Space miscalc unlikely

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

During the IAC 2015, China re-iterated the wish for international participation and cooperation in its space station project including extending the station by modules provided by international partners. Twitter messages posted by a European journalist from the Congress, that is still to be confirmed, however, showed a different view from ESA. ESA’s new Director General JohannDietrich Wörner said he had told China that the world does not need two space stations and will likely persuade China to drop its space station in favour of joining the ISS. On the other side, during the traditional “Heads of Space Agencies Panel” in IAC 2015, NASA Administrator Charles Bolden expressed his belief that the current exclusion of China from the ISS will not last forever. Though Sino-U.S. cooperation on human spaceflight is still uncertain, a positive move between the two countries has been made, that is the establishment of a space hotline. Western media reported in November that the hotline has been setup between Washington and Beijing to allow easy sharing of technical information about their space operations, hopefully **avoiding any misunderstandings or accidents.** Russia’s space agency Roscosmos on 17 December signed a cooperation agreement with the China National Space Administration (CNSA). The document was signed at the 20th regular meeting of Russian and Chinese Heads of Government, during Russian Prime Minister Dmitry Medvedev’s three-day visit to Beijing. The two

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

#### Deterrence and interdependence check

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

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

Missiles and Lasers and Viruses, Oh My

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

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

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

Swords of Many Edges

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

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

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

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

Security in the Heavens and on Earth

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

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

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

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

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

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

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

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

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

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

#### Climate doesn’t cause extinction.

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

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

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

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

Peter Kalmus, Data Scientist, Jet Propulsion Laboratory:

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

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

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

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

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

Andrew King, Research fellow, University of Melbourne:

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

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

Peter Kalmus, Data Scientist, Jet Propulsion Laboratory:

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

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

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

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

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

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

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

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

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

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

## Multilat

#### Competition is better for stability – increasing relations generates rising expectations over other issues which, when not met, cause war

Yan 2010

[Xuetong, The Chinese Journal of International Politics, Volume 3, Issue 3, Autumn 2010, Pages 263–292, https://doi-org.libproxy.utdallas.edu/10.1093/cjip/poq009, sh]

Certain people might argue that the mutual delusion of friendship serves the interests of both China and the United States. This argument, however, lacks hard evidence as well as a logical supporting explanation. Contrarily, it is not difficult to explain why superficial friendship is less stable than real friendship or indeed than real or superficial enmity. The substance of a bilateral relationship is determined according to the consistence of two countries’ knowledge of their interest relations and the reality. The relationship is substantive when the knowledge and the reality are in consistence; it is otherwise superficial. A superficial friendship is one where two nations imagine that they have more mutually favourable than unfavourable interests, when the reality is the opposite. Superficial enmity, in contrast, is inconsistence whereby two nations believe that they have more mutually unfavourable interests than favourable ones when the reality is vice versa. Inconsistence between knowledge and the reality is a main destabilizing factor in bilateral relations. The stability of a bilateral national relationship is mainly determined by mutually favourable interests and mutual expectations of support (see Figure 3). That any two nations have both mutually favourable and unfavourable interests is a universal given. Mutually favourable interests engender mutual support between two nations, and mutually unfavourable interests cause conflicts. Both stable and unstable friendship and stable and unstable enmity can exist between two nations. Absence of mutual support, and imbalances between two nations’ mutual expectations of support and that they actually receive can cause instability. Mutual support usually lives up to mutual expectations when two nations have more mutually favourable interests than unfavourable ones. An appropriate balance between mutual support and mutual expectations thus maintains the stability of the countries’ bilateral relations. If we examine China–US relations of the previous 60 years, we can find those from 1978 to 1988 were the most stable, mainly because their mutually substantial military support was approximately equal to their mutual expectations. China helped the United States to contain Soviet military expansion in both Asia and Africa, and the United States constrained the Soviet from attacking China in 1979 when China was at war with Vietnam.57 Their different political systems, meanwhile, meant that China and the United States had no expectations of one another as regards cooperation other than containing the Soviets. For instance, the United States never expected to engage in dialogue with China on human rights dialogue as it does today. People may question about the qualification of China–US relationship during 1978–1988 as a real friendship in comparing with US–UK relationship or US–Japan relationship after the World War II. Nevertheless, it has been the best relationship China and the United States enjoyed since the PRC was founded and its character is different from other periods. A superficial friendship is less stable than a real friendship, mainly interests than favourable ones (see Figure 3). Nations that are superficial friends are those with more mutually unfavourable than favourable interests which adopt the policy of pretending to be friends instead of acknowledging their differences and proceeding on that basis. The policy of pretending to be friends engenders the expectation between two nations that one side will support the other in the same way as would a real friend. The reality, however, is that the mutually unfavourable interests that exceed favourable ones disenable the two nations from providing mutually substantive support. Each is hence often disappointed with the other’s unfavourable decisions. The present China–US relationship typifies this scenario. When China and the United States agreed to establish a strategic partnership, each expected the other’s support in protecting its core interests, but did not consider the extent of support it would itself give to protecting the other’s core interests. Beijing and Washington claimed in their joint statement of 2009 that, ‘The two sides agree that respecting each other's core interests is extremely important to ensure steady progress in China–US relations.’58 It goes without saying that national security is at the centre of a nation state’s core interests, but as China and the United States have more unfavourable than favourable interests, they can hardly offer substantial mutual support. Specifically, China cannot support the United States either in the War in Iraq or in Afghanistan, and the United States cannot support China in counter-secessionism in Taiwan, Tibet and Xinjiang. This is why China so frequently complains that the United States has damaged Chinese core interests.59 When China and the United States agreed to respect one another’s core interests they did not specify what these interests were precisely because they conflict with one another. For instance, as China regards Taiwan as a part of its territory, preventing Taiwan from purchasing military equipments from foreign powers is one of its core interests. Meanwhile, the United States regards Taiwan as a military ally and providing it with military equipments as one of its core interests of maintaining military domination in East Asia

#### No nuke terror NOR retal

Christopher **McIntosh &** Ian **Storey 18**. McIntosh is visiting assistant professor of political studies at Bard College; Storey is a fellow at the Hannah Arendt Center for Politics and Humanities at Bard College. 06/01/2018. “Between Acquisition and Use: Assessing the Likelihood of Nuclear Terrorism.” International Studies Quarterly, vol. 62, no. 2, pp. 289–300.

When looked at in isolation, each of the three areas of potential loss presents significant disincentives for immediate attack. In combination—as they would be considered in practice—the higher strategic value of available alternatives appears decisive. In other words, even if one reads our analysis as affirming the importance of nuclear acquisition, when considering competing options and the dangers that attach to any detonation attempt, nuclear attack is highly unlikely. Strategic Opportunity Costs Future opportunities available for “using” a nuclear weapon are effectively foreclosed depending on the aggressiveness of the option a group chooses. The two-by-two matrix of nuclear strategies in Figure 1 is only a rough guide encompassing many possible permutations in the nuclear sphere. The organization always retains non-nuclear options, even once they acquire nuclear weapons. As evidenced by the Cold War and in Kargil, the stability-instability paradox holds empirical weight. Nuclear acquisition by two opposing actors does not necessarily foreclose conventional and/or asymmetric attacks (Cohen 2013; Kapur 2005). Given the unique relationship between a state and terrorist organization, we can expect similar and even exacerbated levels of instability. This can expand even beyond aggression. Remaining options range all the way from the pacific—pursuing negotiations, cooption, entrance into the legitimate political arena (for example, Sinn Fein)—to heightened conventional attacks and the usage of non-nuclear forms of WMDs. This last point is worth emphasizing. Even in the remote case where an actor successfully acquires a nuclear weapon and primarily seeks raw numbers of casualties—whether due to outbidding or audience costs—other forms of WMDs are likely to be more appealing. As Aum Shinrikyo indicates, this is particularly the case for the group that overcomes the inevitable political and technological hurdles (Nehorayoff et al. 2016, 36–37). For these groups, chemical, biological, and radiological weapons (CBRW) are considerably easier to acquire, use, and stockpile. This is especially true when considered over time, rather than a single operation.18 While there are certainly downsides to CBRWs vis-à-vis nuclear weapons (delivery may paradoxically be easier and the maintenance risks comparatively smaller), they are undoubtedly easier to procure and produce (Zanders 1999). More importantly, CBRWs are perceived as easier to produce and thus likely to be viewed by targets as iterable. Unlike a nuclear attack, CBRW threats are more credible because a single CBRW attack can likely precipitate an indefinite number of follow-ups. In addition to the problem of iterability, a terrorist organization must always worry about the possible ratchet effect of an attack—a problem Neumann and Smith (2005, 588– 90) refer to as the “escalation trap.” A terrorist organization is different than a state at war because it manipulates other actors primarily through punishment. Campaigns are a communicative activity designed to convince the public and the leaders that the status quo is unsustainable. The message is that the costs of continuing the target state’s policy (such as the United States in Lebanon, France in Algeria, or the United Kingdom in Northern Ireland) will eventually outweigh the benefits. Once an organization conducts a nuclear attack, it lacks options for an encore. Not even the most nightmarish scenarios involve an indefinite supply of weapons. If a single attack plus the threat of one or two others does not induce capitulation, the organization might unwittingly harden the target state’s resolve. The attack could raise the bar such that any future non-nuclear attack constitutes a lessening of costs vis-à-vis the status quo. There are also heavy opportunity costs involved in pursuing, developing, and maintaining a nuclear capacity, let alone actually deploying and delivering it. As Weiss puts it, “even if a terror group were to achieve technical nuclear proficiency, the time, money, and infrastructure needed to build nuclear weapons creates significant risks of discovery that would put the group at risk of attack. Given the ease of obtaining conventional explosives and the ability to deploy them, a terrorist group is unlikely to exchange a big part of its operational program to engage in a risky nuclear development effort with such doubtful prospects” (Weiss 2015, 82). Organizational Survival Terrorist organizations are not monolithic entities, nor are they wholly self-sufficient actors. Historically speaking, these groups consider the public reception of their attacks in a complex manner. As Al Qaeda, the Palestine Liberation Organization (PLO) of the 1970s, the IRA, and anarchist groups of the nineteenth and twentieth centuries all demonstrate, these groups’ thinking about public reception is nuanced and complex, regardless of time or place. We focus on two types of audiences that would be affected by decisions to attack: those internal to the group itself, and their own broader public. While many claim that terrorists are undeterrable, the argument misconstrues the relational dynamics between a terrorist organization, target state, international community, and the internal dynamics of the organization itself (Talmadge 2007). It is undoubtedly the case that deterring a terrorist organization in the traditional sense is difficult (Whiteneck 2005; Mearsheimer and Walt 2003). Many lack a recognized territorial base, work on the fringes of the global economy, and are internally structured to be difficult to combat directly. Nearly all possess some permutation of these factors. Combined with the symbolic importance of even relatively small terror attacks—especially given the role of international media—physically denying a group the ability to conduct attacks is uniquely challenging. It is minimally a vastly different proposition than precluding a state’s ability to successfully invade its neighbor or conduct ongoing missile strikes.19 Despite these concerns, there are important reasons deterrence can and empirically does work in the case of terrorist organizations. This is especially possible when the state-terrorist relationship is not zero-sum and the target retains some influence over the realization of the group’s eventual goals (e.g., by denying the group access to territory or withholding international recognition) (Trager and Zagorcheva 2006, 88–89). Nuclear attack presents two significant threats to the organization’s continued existence: internal threats of disintegration and external threats to their continued operations and survival. Terrorist organizations are not unitary, homogenous organizations. This is especially true for groups possessing the size and competence likely necessary for operational nuclear capacity. As many have noted, the terrorist organizations of the present are vastly different from those Marxist- Leninist groups that terrorized Europe and the United States in the 1970s and early 1980s. There is a well theorized psychological value of the organization to individual terrorists themselves (Post 1998), but there is more to the organizational valuation of survival than captured in this atomistic picture. Modern, large-scale terrorist organizations are typically heavily intertwined with the social fabric of the groups from which they originate (Cronin 2006; Hoffman 2013). Beyond significant networks of financial connections, accounts, and moguls (Hamas, for example, draws funding from a massive international system of mosque-centered charities, while the IRA’s extensive connections to the Irish diaspora in the United States were well documented), many terrorist organizations build extensive networks of sub-organizations that tie them to the communities in which they are based. Hezbollah, like the IRA, is internally divided between a military arm and a political arm and has run an extensive network of community schools, medical care centers, and religious outreach groups. Together they are designed to embed the organization in the social life of (predominantly southern) Lebanon’s Muslim population and provide Hezbollah with fresh recruits (Parkinson 2013). The group’s persistence as a dominant political force in southern Lebanon nearly two decades after the initial Israeli decision to withdraw demonstrates terrorist organizations grow to exceed their initial military objectives. The spread of Al Qaeda and its affiliates has followed a similar path. Maintaining the continued support of these multiple audiences is therefore a crucial consideration for these organizations. While these audiences could conceivably be more casualty-acceptant than the individuals deciding the group’s operations, the broader public will usually moderate extreme behavior. The literature assessing so-called “radical- ization” and violence by individual actors emphasizes that there isn’t a one-to-one relationship between ideological extremism and acceptance of extraordinary violence in pursuit of those goals (McCauley and Moskalenko 2014; Jurecic and Wittes 2016). It is important to resist the assumption that a politically extreme ideology automatically corresponds to shared assumptions regarding casualty-acceptance. Some argue that the move toward “mass-casualty” terrorism obviates these concerns. Aside from the fact that the trend line is either flat or receding in terms of the death toll of individual attacks (even if campaigns themselves might be becoming deadlier), there is an orders of magnitude distinction in casualties between a nuclear attack and even the 2001 attack in the United States. While the psychological restraints on nuclear use among states do not translate precisely to this context, there is good reason to believe that transgressing the longstanding nuclear taboo would have dramatic and negative effects on broader public support. In an urban environment, the media would inevitably capture the attack and its gruesome after-effects in photography or video. This imagery would be inconceivable, ubiquitous, and inescapable. Even if supporters accept a highly retributive mentality, or as Hamid (2015) argues about the Islamic State, actively accept the potential of death, this would pose a severe problem for all but the most extreme supporters.20 Beyond these supporters, a nuclear attack affects the internal dynamics of the terrorist organization in multiple ways. There could be divisiveness regarding the most effective use of the weapon. This would be magnified by the scale of the opportunities and perceived opportunity costs. Such debates have the potential to splinter the organization as a whole (Cronin 2009, 100–02). Factional conflict in terrorist organizations appears frequently over questions of goals and tactics (Crenshaw 1981; Chai 1993). A decision to attack with a nuclear weapon risks considerable internal alienation over a variety of issues—targeting decisions, method of attack, campaign goals, potential deaths of supporters, and the domestic and international response (Mathew and Shambaugh 2005, 621–22). Finally, a nuclear attack would exponentially raise the threat to each individual who composes the extended organization. Post-nuclear attack, the greatest strengths of a terrorist organization—its lack of material territory, economy, or overt institutions and reliance on individuals—could turn into its greatest weaknesses (Eilstrup-Sangiovanni and Jones 2008). Currently, a wealthy financier found to have ties to a terrorist group would be monitored for intelligence, arrested, and brought up on criminal charges. Post-nuclear attack, the consequences would be immediate and rather worse. Externally, in a world post-nuclear attack, international cooperation would be instant and deep. One of the only international treaties to even define a terrorist in international law post-2001 has been the Nuclear Terrorism Convention (Edwards 2005). A nuclear attack would be far outside the norm of international politics. It would disrupt the dominance of state-actors and likely stimulate unparalleled cooperation to apprehend the responsible parties to prevent future attacks. Moreover, many large terrorist organizations require (some) tacit acquiescence by a host state. Even those with hostile host states have territory where they remain relatively unaffected by local governments (Korteweg 2008). Post-nuclear attack, these host states face an enormous incentive to find the actors responsible before the target state does. After an attack, regimes would find it difficult to claim that they “didn’t know” or “couldn’t stop them.” Claims of corruption or ineffective institutions would be unlikely to find much sympathy. Faced with potential organizational extinction itself, a host state/government will likely be much less committed to the survival of the terrorist group. This is likely to vary significantly from how they might otherwise behave after a more conventional attack. For these states, there would be a real fear of “Talibanization” and ruthless attempts at regime change post-attack. From the perspective of the group, it would know that it could be facing a unified international community and the removal of tacit state support. It would take a particularly confident leadership to presume it could continue to function post-attack without massive disruptions. Most strategic actors are risk-averse when facing the potential of complete elimination. There is little reason to believe terrorist groups would act any differently.

#### No resource wars

Bruno Tetrais 12, Senior Research Fellow at the Fondation pour la Recherche Stratgique, former Director, Civilian Affairs Committee, NATO Assembly, “The Demise of Ares,” 2012, csis.org/files/publication/twq12SummerTertrais.pdf

The Unconvincing Case for ‘‘New Wars’’ Is the demise of war reversible? In recent years, the metaphor of a new ‘‘Dark Age’’ or ‘‘Middle Ages’’ has flourished. 57 The rise of political Islam, Western policies in the Middle East, the fast development of emerging countries, population growth, and climate change have led to fears of ‘‘civilization,’’ ‘‘resource,’’ and ‘‘environmental’’ wars. We have heard the New Middle Age theme before. In 1973, Italian writer Roberto Vacca famously suggested that mankind was about to enter an era of famine, nuclear war, and civilizational collapse. U.S. economist Robert Heilbroner made the same suggestion one year later. And in 1977, the great Australian political scientist Hedley Bull also heralded such an age. 58 But the case for ‘‘new wars’’ remains as flimsy as it was in the 1970s. Admittedly, there is a stronger role of religion in civil conflicts. The proportion of internal wars with a religious dimension was about 25 percent between 1940 and 1960, but 43 percent in the first years of the 21st century. 59 This may be an effect of the demise of traditional territorial conflict, but as seen above, this has not increased the number or frequency of wars at the global level. Over the past decade, neither Western governments nor Arab/Muslim countries have fallen into the trap of the clash of civilizations into which Osama bin Laden wanted to plunge them. And ‘‘ancestral hatreds’’ are a reductionist and unsatisfactory approach to explaining collective violence. Professor Yahya Sadowski concluded his analysis of post-Cold War crises and wars, The Myth of Global Chaos, by stating, ‘‘most of the conflicts around the world are not rooted in thousands of years of history --- they are new and can be concluded as quickly as they started.’’ 60 Future resource wars are unlikely. There are fewer and fewer conquest wars. Between the Westphalia peace and the end of World War II, nearly half of conflicts were fought over territory. Since the end of the Cold War, it has been less than 30 percent. 61 The invasion of Kuwait a nationwide bank robbery may go down in history as being the last great resource war. The U.S.-led intervention of 1991 was partly driven by the need to maintain the free flow of oil, but not by the temptation to capture it. (Nor was the 2003 war against Iraq motivated by oil.) As for the current tensions between the two Sudans over oil, they are the remnants of a civil war and an offshoot of a botched secession process, not a desire to control new resources. China’s and India’s energy needs are sometimes seen with apprehension: in light of growing oil and gas scarcity, is there not a risk of military clashes over the control of such resources? This seemingly consensual idea rests on two fallacies. One is that there is such a thing as oil and gas scarcity, a notion challenged by many energy experts. 62 As prices rise, previously untapped reserves and non-conventional hydrocarbons become economically attractive. The other is that spilling blood is a rational way to access resources. As shown by the work of historians and political scientists such as Quincy Wright, the economic rationale for war has always been overstated. And because of globalization, it has become cheaper to buy than to steal. We no longer live in the world of 1941, when fear of lacking oil and raw materials was a key motivation for Japan’s decision to go to war. In an era of liberalizing trade, many natural resources are fungible goods. (Here, Beijing behaves as any other actor: 90 percent of the oil its companies produce outside of China goes to the global market, not to the domestic one.) 63 There may be clashes or conflicts in regions in maritime resource-rich areas such as the South China and East China seas or the Mediterranean, but they will be driven by nationalist passions, not the desperate hunger for hydrocarbons.

#### Satellites key to drones and PGS

Jeremy Rabkin 17, Professor of Law at George Mason University; and John Yoo, Professor of Law at the University of California-Berkeley, 2017, Striking Power: How Cyber, Robots, and Space Weapons Change the Rules of War, p. 193-194

Since the end of the Cold War, space-based military systems have come to exert a more direct terrestrial impact. The global positioning system (GPS) allows U.S. aircraft, naval vessels, and ground units to locate their whereabouts and to direct their fire with precision. The stunning speed of the initial invasion of Iraq in 2003, like the earlier triumph of the Persian Gulf War in 1991, demonstrates the lethal success of military’ operations that integrate satellite communications and information gathering. The drone campaign against terrorist leaders in the Middle East and Pakistan depends on satellites to locate targets, conduct real-time surveillance, and then control the fire systems of the drones.

The future holds even more advances in store. Building on precision-guided munitions, the U.S. Defense Department is developing a “prompt global strike” system that will use GPS satellites to guide hypersonic missiles, armed with conventional warheads, to targets anywhere in the world within an hour.1 More exotic versions envision bombardments from orbital platforms using rods, which would generate their explosive force purely from the kinetic energy created by their high terminal velocity upon reentering the atmosphere. American planners speculate that such systems could replace the need for tactical nuclear weapons because of their combination of precision, speed, and destructive potential.

#### PGS causes destabilization and conflict.

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Undermining stability and deterrence

While past US Administrations have viewed CPGS as enhancing deterrence, these weapons have provoked intense debate, in particular how they will impact crisis stability. One of the most significant concerns is that Russia will view such weapons as a direct threat to its Strategic Nuclear Forces. Indeed, this outlook appears in Russian doctrine, and in policy statements in various international fora. For instance, at the 2015 Nuclear Non-proliferation Treaty Review Conference, the head of the Russian delegation stated that US policy hinders further nuclear reductions through its ‘intransigent course’, undermining strategic stability by pursuing, among other things, a missile defence system and the “prompt global strike” concept.[6] This is a consistent mantra. However, some argue that Russia overstates the danger to its forces. Russia is the only state beyond the US with a warning system that is capable of detecting a missile launch. Its over-the-horizon and space-based capabilities should be easily capable of discerning the difference between an ICBM and a CPGS weapon. And while a greater proportion of its deterrent is land-based than that of the US (and clearly that of Britain or France), Russia maintains a significant second-strike capability with its SLBM force. Russia’s willingness to introduce nuclear weapons at a lower threshold than other powers is also clearly established. Therefore, a disarming strike by the US against the Russian ICBM force, or perhaps even its command and control structure, would seem highly risky, and therefore unlikely. Nonetheless, Russia’s sensitivity over their nuclear deterrent cannot be underestimated. The nuclear deterrent is seen as integral to Russia’s claim to be a great power. In addition to this, Russian policy makers are keenly aware of the inferiority of their conventional forces to the US, which acts to magnify both the symbolic and strategic value of nuclear weapons to the Kremlin. Any perceived threat, real or otherwise, will serve to create significant concerns in Moscow.

The perceived threat from these weapons is further amplified when CPGS is allied to missile defence systems. There are numerous statements by Russian and Chinese officials as to the combined effect of these conventional systems, and their capability of a disarming first strike. Such fears have driven Russia to increase its reliance on tactical nuclear weapons, and to upgrade the robustness of its nuclear systems, while also hastening aerospace defence capabilities. The reliance on tactical nuclear weapons in particular brings negative consequence in terms of security and control. They are widely held to highly destabilizing, and change the metrics of deterrence.

Further concerns are created by the ambiguities that are inherent in CPGS designs. These relate to the type of warhead, the country targeted, and the type of target. The points relating to the ambiguity of whether a weapon carried a nuclear or conventional warhead has been discussed above. The withdrawal of funding for the CTM has probably eradicated this as an uncertainty, at least as far as the US programme is concerned. Basing options and inspections would serve to eliminate the vestiges of any further doubt. However, the latter two concerns are more persistent. The ability of CPGS platforms to manoeuvre means that their destination cannot be determined until late in the flight envelope — perhaps not until the final moments. Thus a strike on a third party could be interpreted by Russia (and perhaps China in the future if it builds a missile warning system) as a strike on itself, and trigger a response. The likelihood of such a scenario is slim, but cannot be discounted entirely. Similarly, a state detecting an incoming strike (again, only Russia currently) may incorrectly assume that the strike is targeting its nuclear capabilities, rather than conventional forces. The fear would be that it would result in a serious escalation of tension, or even a nuclear retaliation. However, it is worth noting that the current costs of CPGS technologies would mean that such strikes would involve very limited number of weapons. Such numbers may not be considered sufficient for Russia to retaliate, though they might present a greater concern for China and its smaller nuclear force. Thus it is unlikely that a CPGS strike would be overwhelming. Once more, however, it may be perceptions that matter most. The cost and complexity of US CPGS systems make it hard to persuade Moscow or Beijing that they are designed for much less capable states, and there appears an assumption that ‘orthodox’ nuclear deterrence may be ineffective against conventional counterforce threats.

Thus there is concern that CPGS could have significant impact on the global nuclear order, and perhaps also nuclear proliferation. Even though the US ties these to nuclear reductions, the increased emphasis on conventional weaponry may do very little to allay security concerns in other states. In a scenario of decreased nuclear weapons numbers, conventional weapons will only increase in salience. The consequences could reduce the prospects for future nuclear reductions, and possibly increase tendencies towards proliferation.

Beyond the potential effects on escalation dynamics, questions remain as to how well these weapons would perform their mission. As CPGS rely on precision for their effect, an important consideration is exactly how precise such a weapon would be, given range and manoeuvring, particularly in environments where navigational signals are degraded or denied. Related to this, the timeliness of information is critical. How the requisite ISTAR assets can be brought to bear in non-permissive environments to provide this information, and indeed if they can, whether they wouldn’t be a more effective delivery platform themselves, are further issues that need resolving. Stealth platforms, or future armed reconnaissance Remotely Piloted Air Systems (RPAS) could be more effective in this role.[7]