## Solar DA

#### Space based solar power is coming now – but it depends on private actors, and the aff

Kaplan 21 [Spencer Kaplan, 7-26-2021, "Op-ed," SpaceNews, <https://spacenews.com/op-ed-its-time-to-seriously-consider-space-based-solar-power/> [accessed 2-7-22] lydia

Although space-based solar power (SBSP) sounds like science fiction, scientists and engineers have explored developing the futuristic technology for decades but repeatedly came to the same [conclusion](https://www.nasa.gov/pdf/716070main_Mankins_2011_PhI_SPS_Alpha.pdf): SBSP is likely technologically possible but for it to be feasible, launch costs will have to come down considerably. Now that companies like SpaceX, Blue Origin, and Rocket Lab have demonstrated re-use capabilities and launch costs are plummeting, it is time to think seriously and boldly about the development of SBSP. It is difficult to overstate the benefits of SBSP. For one, it could eventually provide inexhaustible clean energy to civilians because SBSP produces no harmful byproducts and uses solar radiation as its fuel. The United States could also use SBSP to create a dynamic national energy system modeled after the Strategic Petroleum Reserve. If the United States had a national SBSP constellation when Texas experienced widespread outages in February, the federal government could have supplied emergency power to civilians instantly. Scientists and engineers have even [proposed](https://www.nasa.gov/pdf/716070main_Mankins_2011_PhI_SPS_Alpha.pdf) using SBSP to power lunar exploration and resource extraction operations in the moon’s permanently shaded regions (PSRs), where traditional solar power would be impossible to utilize. SBSP has enormous military uses as well. The military [could use](https://www.nasa.gov/pdf/716070main_Mankins_2011_PhI_SPS_Alpha.pdf) SBSP to power remote bases instead of using dangerous fuel convoys that cost up to hundreds of dollars per gallon. SBSP could also theoretically be used to power unmanned aerial vehicles (UAVs), allowing them to stay in the air until their components fail. Removing energy as a limiting factor in military operations stands to radically change conventional military doctrine. In recognition of the vast potential of SBSP, nations around the world have begun heavily investing in the potentially transformative technology. Japan [enacted](https://www.nasa.gov/pdf/716070main_Mankins_2011_PhI_SPS_Alpha.pdf) legislation in 2009 that requires its government to research SBSP and plans to build a 1 GW system in the 2030s. The European Union and India have also [begun](https://www.esa.int/Enabling_Support/Preparing_for_the_Future/Discovery_and_Preparation/Space-based_solar_power_seeking_ideas_to_make_it_a_reality) [considering](https://www.newindianexpress.com/states/karnataka/2018/jul/08/india-needs-to-create-solar-power-satellite-indian-space-research-organisation-1840117.html) SBSP as a potential power system for the future. No country, though, has approached China’s interest and level of investment. China has[built](https://www.uscc.gov/sites/default/files/Namrata%20Goswami%20USCC%2025%20April.pdf) the world’s first SBSP base plant and plans to build a 100 kW satellite in LEO by 2025, a 1 mW satellite in GEO by 2035, and a full, commercial satellite in 2050. Since SBSP could be a transformative technology, it is reasonable to ask why the United States is not investing heavily in SBSP. In fairness, the United States has launched a few research projects like the Naval Research Laboratory’s (NRL)[Lectenna](https://www.nrl.navy.mil/Careers/STEM/LEctenna-Challenge/), [Photovoltaic Radio-frequency Antenna Module](https://www.nrl.navy.mil/Careers/STEM/LEctenna-Challenge/) (PRAM), and [Power Transmitted Over Laser](https://www.nrl.navy.mil/Media/News/Article/2504007/researchers-transmit-energy-with-laser-in-historic-power-beaming-demonstration/) (PTROL) experiments. The Department of Defense also launched a 100 million dollar partnership with Northrop Grumman on [Space Solar Power Incremental Demonstrations and Research](https://afresearchlab.com/technology/successstories/space-power-beaming/) (SSPIDR), which aims to launch an SBSP demonstration spacecraft called Arachne in 2024. Still, though, the United States lacks a clear plan for SBSP and is dangerously at risk of falling behind its competitors. To position itself well for the future, the United States should begin treating space-based solar power like the groundbreaking technology that it could be. The government could start by naming a point organization to coordinate and lead SBSP research. Naming a lead organization will give SBSP a congressional “cheerleader” to attract federal funding while also clarifying domestic and international regulatory responsibilities. The United States should also engage the private sector by subsidizing research and development of SBSP. As it stands, SBSP is likely viewed as too risky for robust private investment, but if the government shouldered some of the cost, as it does with other forms of green energy, the private sector might be more willing to develop SBSP capabilities.

#### It solves warming

Ravisetti 21 [Monisha Ravisetti, 11-8-2021, "Harvesting energy with space solar panels could power the Earth 24/7," CNET, <https://www.cnet.com/news/harvesting-energy-with-space-solar-panels-could-power-the-earth-247/> [accessed 2-8-22] lydia

But there's a caveat to this wonderful power source. Solar panels can't collect energy at night. To work at peak efficiency, they need as much sunlight as possible. So to maximize these sun catchers' performance, researchers are toying with a plan to send them to a place where the sun never sets: outer space.

Theoretically, if a bunch of solar panels were blasted into orbit, they'd soak up the sun even on the foggiest days and the darkest nights, storing an enormous amount of power. If that power were wirelessly beamed down to Earth, our planet could breathe in renewable clean energy, 24/7. That would significantly reduce our carbon footprint. Against the backdrop of a worsening climate crisis, the success of space-based solar power could be more important than ever. The state of the climate is in the spotlight right now as world leaders gather in Glasgow, Scotland, for the COP26 summit, which has been called [the "world's best last chance" to get the crisis under control](https://www.cnet.com/news/cop26-kicks-off-what-is-it-and-why-is-it-the-worlds-best-last-chance-for-climate-action-glasgow-climate-change/). [CNET Science](https://www.cnet.com/topics/science/) is highlighting a few futuristic strategies intended to aid countries in cutting back on human-generated carbon emissions. Next-generation tech like space-based solar power can't solve our climate problems -- we still need to rapidly decarbonize our energy systems -- but green innovation could help achieve the goals of the Paris Agreement: Limit global warming to well below 2 degrees Celsius (3.6 degrees Fahrenheit) by the end of the century.  An unlimited supply of renewable energy from the sun might help us do that. From science fiction to fact For decades, space solar power has lived in the minds of science fiction lovers and scientists alike. In the early 1900s, [Russian scientist-mathematician Konstantin Tsiolkovsky](https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/Exploration/Konstantin_Tsiolkovsky) was steadily churning out a stream of futuristic designs envisioning human tech beyond Earth. He's responsible for conjuring things like space elevators, steerable rockets and, you guessed it, [space solar power](https://go.gale.com/ps/i.do?id=GALE%7CA62793333&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=03623416&p=AONE&sw=w&userGroupName=anon%7Ed5adf45d). Since Bell Labs invented the [first concrete "solar panel" in the '50s](https://www.smithsonianmag.com/sponsored/brief-history-solar-panels-180972006/), international scientists have been working to make  Tsiolkovsky's sci-fi fantasy a reality. They include [Japanese researchers](https://nextrendsasia.org/japan-pioneer-of-transferring-solar-energy-from-space-to-earth/#:~:text=Konstantin%20Tsiolkovsky%2C%20commonly%20known%20to,the%20%E2%80%9Cconquest%20of%20planets%E2%80%9D.), the [US military](https://www.space.com/x-37b-space-plane-solar-power-beaming) and a team from the California Institute of Technology [spearheading the Space Solar Power Project](https://www.spacesolar.caltech.edu/).  Space solar power "was investigated extensively in the late 1960s and the 1970s, sort of in the heyday of the Apollo program," said Michael Kelzenberg, senior research scientist on the project.  Unfortunately, due to the materials' weight and bulk, the era's technology wasn't advanced enough to cost-effectively achieve the feat. It would've been exceptionally difficult to send classic solar panels to space via a rocket without breaking the bank. "The distinctively unique and defining feature of the Caltech approach is a focus on reducing the component mass by 10 to 100 times," said Harry Atwater, the project's principal investigator. "This is essential to reducing both the manufacturing and the launch costs to make space solar power economical."

### Debris Removal CP

#### States should establish an international body that would license resources from outer space for private appropriation with a 20% royalty on all profits that is put into a Space Resource Fund that is used to fund space traffic management including at least active debris removal.

#### The CP competes and solves debris (the entirety of the aff).

Saletta 16 [Morgan Saletta, PhD, History and Philosophy of Science, The University of Melbourne, and Kevin Orrman-Rossiter, Graduate Student, History & Philosophy of Science, The University of Melbourne. April 17, 2016. “All of humanity should share in the space mining boom,” <https://theconversation.com/all-of-humanity-should-share-in-the-space-mining-boom-57740>] brett

One solitary asteroid might be worth trillions of dollars in platinum and other metals. Exploiting these resources could lead to a global boom in wealth, which could raise living standards worldwide and potentially benefit all of humanity. There are already companies, such as Planetary Resources, hoping to make mining in space a reality. Peter Diamondis, co-founder of Planetary Resources and founder of the XPrize Grand Challenges, believes that the benefits to humanity give us a moral imperative to explore and utilise space. He has also declared “there are twenty-trillion-dollar checks up there, waiting to be cashed!” However, behind the utopian rhetoric and dazzling dreams of riches lie some very real problems. Ownership and the Outer Space Treaty The framework of international space law is given by the Outer Space Treaty (OST), which entered into force in 1967. Among its main principals, the OST includes these statements: the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind and, outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means Because the OST is generally interpreted as preventing anything like private fee-simple ownership, it is sometimes claimed to be an obstacle to commercial ventures in space. But such claims simply do not hold water. There are numerous terrestrial examples where resources are profitably exploited in the absence of fee-simple ownership. Governments routinely licence companies to engage in timber extraction, mining, offshore oil exploration and other activities, receiving royalties payments on production. In the United States, revenues from such royalties totalled some US$13.5 billion dollars in 2014 from federally owned or managed lands alone. Nevertheless, some proponents of mining in outer space argue for serious modification or an end to the Outer Space Treaty and claim, against the evidence, that without fee-simple ownership, there is no incentive for commercial exploitation. The Unites States’ Space Act of 2015 was just one volley – and a deliberately vague one at that – in this ongoing international debate. A balanced approach? The riches exist, but how will humanity benefit from mining in outer space, or for that matter, other global commons such as the deep sea floor? Behind the lofty rhetoric of benefits to humanity, there is a dark shadow of voodoo economics, the shambling, walking dead figure of trickle down economics– and the possibility of a world where a few trillionaires enjoy the view from space while others barely eke a living on its surface. Yet we do suggest that commercial interests and profit seeking can be a healthy part of the exploration of outer space. Yet outer space is not the Wild West frontier of Frederick Jackson Turner, nor do we live in the Gold Rush days of Jack London’s tale of greed and death. In the common heritage of space, with multiple state and private actors engaging in exploration and potentially exploitation, international cooperation and oversight will benefit all. The Alaskan model There is a balanced, pragmatic approach that will promote commercial and profit driven activities, while also producing tangible benefits to all of humanity. Importantly, this pragmatic approach has a well established precedent that has existed for nearly 40 years. And this comes not from a social democracy or left-wing ideology, but was the brainchild of a libertarian, Republican governor of Alaska, Jay Hammond. That model is the Alaska Permanent Fund Corporation (APFC) created in 1976, and its unique “citizen’s dividend”. The APF is a resource wealth fund, which derives its revenue primarily from leases on oil fields. In 1977, Hammond suggested that “rather than permitting government to spend all public monies earned through the exploitation of the public’s resources for what government thinks best, let’s grant shares to Alaskans.” The first dividend payment was made in 1982, and in 2015 that payment amounted to US$2,072. Linking a citizen’s dividend to a sovereign wealth fund was unique, but the idea of a citizen’s dividend has a long and venerable tradition. One of the earliest advocates was no less than the political theorist and American Revolutionary, Thomas Paine. International body How would this work for outer space? We need an international body similar to the International Seabed Authority, which was established by the United Nations Convention on the Law of the Sea, or the International Telecommunications Union, which allocates satellite orbits. This would provide the stable business and investment environment that entrepreneurs seek by ensuring international law and obligations are met. This body could license outer space resources and levy a royalty on production, which is part of standard business practice between petroleum and other mining companies and governments here on Earth. In turn, these revenues, or a significant portion thereof, would be deposited in a Space Resource Fund, possibly under the aegis of the World Bank. And every single citizen on Earth, say aged 18 or above, would receive a dividend on a yearly basis as their rightful share as owners of the common province of humankind. Crucially, we are not suggesting redistribution, which has been an obstacle to the International Seabed Authority and the Moon Treaty in the past, but a fair share dividend of wealth that truly belongs to everyone. Our model doesn’t provide a handout, or a welfare cheque, or charity from a trillionaire philanthopist; it pays every owner in a global commons a share of what is rightfully theirs. Even tiny dividends by the standards of the world’s wealthy nations would make a difference for some developing world farmers. If there truly are trillions of dollars out there, then this might be something fundamentally world changing. We accept that Larry Page and Sir Richard Branson – founding investors and advisors in Planetary Resources – and its founders Eric Anderson and Peter Diamandis, truly want humanity to benefit from outer space, and that they truly believe in corporate social responsibility and a sustainable future. We would encourage them to embrace the idea that the sky really does belong to all of us, as the common “province of all mankind”. By paying rent for the right to exploit resources in space and royalties on production, the same way oil companies pay to exploit oil in the Gulf of Mexico, they’ll be engaging in business as usual. They will have bought the right to make a potentially enormous profit and prove they really are responsible global citizens. And they’d get a citizen’s dividend cheque too.

#### Solves debris.

Webb et al. 18 [Lucas; November 2018; Masters of Astronautical Engineering student at USC; Brittany Wojciechowski,\*\*; Wichita State University PhD student in aerospace engineering; Aubrey Koonce\*\*, Molly Williams\*\*\*, Wichita State University; European Space Policy Institute; “The Need for Strict Regulation of Asteroid Mining,” <https://espi.or.at/publications/voices-from-the-space-community/category/3-voices-from-the-space-community>] brett

In terms of policy recommendations, the aim is not to regulate the resources themselves but rather the activity of space mining. The Moon Agreement provides the groundwork for a stricter policy, which provides a model of how asteroid mining policies should be created and implemented. 12 Modeling new regulations based off of the Moon Agreement, we propose the creation of a mediating organization that oversees and enforces asteroid mining and its regulation. As in the Moon Agreement, this organization’s focus should be on the “orderly and safe development of natural resources… the rational management of those resources; the expansion of opportunities… [and] the equitable sharing”13 of asteroidal resources. We propose that asteroid mining firms must enter into a rental agreement with the mediating organizations. To gain access to mine space resources, Parties will be required to pay a small fee. This paid fee could then be applied towards administrative costs, but a portion could also be used to assist underdeveloped States’ space programs. In this way the mediating organization would be similar to the International Seabed Authority under the UN Convention on the Law of the Sea. 14 In order to restrict mining activity, Parties will have a duration of time (depending on extraction process of the mission) or until they meet a specific threshold of resources collected. If a Party does not exceed the threshold then they will have up until the end of the rental agreement to extract resources. By attaching this additional restriction to rented spaces, subsequent mining expeditions will have an equal opportunity to collect the same quantity or as much feasible within the contract duration. Careful documentation of the minerals acquired will be necessary and upon return to Earth, and expeditions will be subject to something akin to a space “customs”. The customs procedures will be to ensure that proper inventory was taken, and no resources are absent or mismarked. Additionally, the Party shall submit a written statement including their own inventory that was taken that contains the type, quantity, etc. of the resources in their possession. This submitted inventory would be open to everyone, allowing for free access to said information. Also, underdeveloped countries would have the ability to petition for resources through the mediating organization. However, it is up to the country/company to decide whether or not they will extend a helping hand. Perhaps an incentive and/or a reciprocal agreement of sorts could be proposed in order to foster assistance between the developed and underdeveloped Parties of the proposal. The proposal should be signed by nations that are interested themselves or have companies within them that are interested in space mining. Companies cannot sign the proposal themselves, however their governing country can sign and inform the mediating agency that they will regulate these companies and ensure they abide by the space mining regulations. Individuals or groups would be allowed to partner together, however the partnership should be outlined clearly within a contract and must be signed by all parties involved. Nations that have ratified the regulations will enforce the rules on the companies within their territory. The consequences of not following the rules of the proposal could include imprisonment and/or a large fine, like those described in Article 18 of Luxembourg’s asteroid mining policies.15 Any companies and/or individuals that do not follow the rules of the proposal should also be reported to the mediating agency along with the consequence given to them. Venturing forward into the opportunities that space provides humanity, equality and fairness should be at the forefront of new policies. While not every situation can be accounted for at the present time, by keeping these notions in mind, just systems can be formed to supply the foundation for future asteroid mining endeavors. The proposed guidelines for a treaty in which countries can come together to be a part of something larger, in the scheme of space exploration, are rough ideas, requiring shaping. However, the authors believe that this outline embodies the key ideals needed for expansion into space. 4 Conclusion For asteroid mining to become a reality collaboration with others needs to occur. Understanding the various aspects mining will include perspectives of multiple stakeholders, with all needing to keep open minds. A key component of this process will be to revise or otherwise clarify the Outer Space Treaty 16 (among other international agreements) as needed to ensure that international law is consistent with the policy recommendations outlined above. We encourage others to start thinking about what needs to be done for asteroid mining to become feasible and properly regulated. We also hope that the regulations provided will be of help in assisting in future policies. We must understand that strict regulations will be required to better ensure that asteroids will not become monopolized or depleted.

## B3 DA

#### Biden passes Build Back Better using his PC to secure a narrow majority.

---time running out, Christmas deadline to pass it through the Senate

---Focus link---Biden has to focus his efforts on Manchin, the plan trades off

---Good faith link---lobbying spurred by the plan drives a wedge between Dems that undermines good faith negotiation

---AT: “Manchin won’t cooperate” Yes he will, he said himself negotiations are going well and agreed to follow up, which also proves PC is key in those upcoming meetings.

---AT: “Behind schedule” - No, Schumer himself predicted this week would be when Senate would go deep into it

Fedor & Politi 12-13 [Lauren\*, US Political Correspondent @ FT, James\*\*, Washington Bureau Chief @ FT; December 13, 2021; “White House scrambles to salvage $1.75tn Build Back Better bill by Christmas,” <https://www.ft.com/content/91c5f083-b783-4293-a007-9802ac9ad1f8>] brett

The White House is rushing to save its plans to pass Joe Biden’s $1.75tn Build Back Better bill by the end of the year, with time running low to win over Democratic holdouts worried about excessive spending and persistent inflation.

On Monday afternoon, the US president spoke with Joe Manchin, the Democratic senator from West Virginia who has proved a frequent obstacle to passing Biden’s domestic agenda.

“The president and Senator Manchin had a good, constructive phone call and agreed to follow up with one another in the coming days,” Andrew Bates, a White House spokesperson, told the Financial Times.

Manchin told reporters on Monday that he had a “good conversation” with the president and remained “engaged” in negotiations.

“We are still talking about different iterations, that’s all,” the senator said. When asked whether a deal could still be done by Christmas, Manchin replied: “Anything is possible.”

The call marked the president’s latest attempt to reach a deal on his flagship economic proposal, which directs large-scale government investment into safety-net programmes and measures to fight climate change.

But the fate of the legislation, which would be paid for largely with tax rises on the wealthy and big businesses, is still uncertain with less than two weeks to go until Democrats’ self-imposed deadline to pass it before Christmas.

Charles Schumer, the Senate majority leader, had initially suggested the upper chamber of Congress would begin poring over the bill this week after the House of Representatives passed it last month.

But many in Washington remain sceptical the bill will arrive on the president’s desk before the end of the year, given Manchin’s resistance.

“I know people have been in a hurry for a long time to do something, but I think basically we are seeing things unfold,” Manchin told reporters on Capitol Hill earlier on Monday. “I basically go and have conversation whenever the president calls me or wants to visit . . . we talk genuinely, as person to person, as two people who have had the experience of being in the Senate.”

Jen Psaki, White House press secretary, said the Biden administration remained “fully supportive” of Schumer’s effort to pass the legislation by the end of the month, and said speculation that the negotiations might stretch into next year was premature.

She was also upbeat about Biden’s relationship with Manchin, saying their “conversations have always operated in good faith”.

Democrats are looking to pass the Build Back Better plan without Republican support using a Senate procedure called reconciliation, which would allow them to bypass the 60-vote filibuster threshold. But because Democrats control the chamber by the narrowest of margins — 50-50, with vice-president Kamala Harris able to cast the tiebreaking vote — they need the support of all 50 Democratic senators.

#### The plan trades off -- ratification requires PC and floor time.

---even if popular, even some opposition ensures immense floor time due to Senate procedures.

Kelley & Pevehouse 15 [Judith G.\*, Duke Sanford School of Public Policy; AND Jon C.W.\*\*, University of Wisconsin-Madison; International Studies Quarterly (2015); “An Opportunity Cost Theory of US Treaty Behavior,” <https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/12521/isqu12185.pdf?sequence=1>] brett

An Opportunity Costs Theory

Although existing theories about veto players and political ideology explain the fate of some treaties, they leave some questions open. To complement these theories, we draw on economic theory to offer an opportunity cost theory of treaty ratification. In economics, the opportunity cost of a resource refers to the value of the nexthighest-valued alternative use of that resource. Scholars of domestic legislation have applied this concept to the time and resources of individual policymakers (Schiller 1995) but also to the fixed chamber time. For example, Koger refers to “[T]he foregone uses of the same [chamber] time for legislators as individuals as well as for the chamber collectively” (Koger 2010:22). Indeed, the Senate’s chamber time is not only fixed, but also scarce. A vast portion of its time goes to required routine business. This leaves little opportunity for discretionary activities (Walker 1977). Given that international policy matters have to draw on exactly the same remaining discretionary floor time as domestic policy, we argue that the United States sometimes delays or derails treaty ratification simply because political capital and Senate floor time are fixed and entail opportunity costs (Heitshusen 2013:4). As Koger (2010:33) argues more generally for legislation, “The expected gains from making a proposal must exceed the time and effort legislators invest in preparing it, organizing and coalition to support it, and taking the time of the chamber to debate and pass it.”

For a treaty to progress, the opportunity cost logic thus would mean that the net gains of the treaty must outweigh the opportunity costs of the advice and consent process. Thus, if the President or some Senators assign only low political value to a particular treaty or if they believe that passage of the treaty will take a lot of Senate floor time, they may decide that they would rather spend their political capital on other matters. If they think they have to fight a war of attrition to overcome opposition, this cost in terms of time and resources may tip the scales against moving the treaty forward. Under these conditions, the opportunity cost of processing the treaty may be too high for the treaty to gain attention, even if the President or more than the required two-thirds of the Senators think the treaty yields some benefits. As a result, whether or how fast a treaty makes it through the process depends on whether it has sufficient support to pass the constitutional process and on whether its value to politicians outweighs the opportunity cost of their political resources: legislative floor time and political capital.

The Fixed Political Agenda Space and Policy Priorities

Why do treaties incur these opportunity costs? Opportunity costs arise when resources are fixed and fully employed. Political agenda space is such a resource; there are only so many policy priorities a President can promote, and only so much Senate floor time to consider them. The media will pay attention to only so many issues on the Washington agenda. Both the President and the Senate must protect their legislative opportunities. They each face opportunity costs.

For the President, the transmittal process is not simple. If the United States signs an international agreement that falls under Article II of the Constitution, the President must transmit it to the Senate for advice and consent before the United States can ratify it. This process entails an analysis of the implications of the treaty including possible implementation legislation required, and the writing of a transmittal letter that serves as a report to the Senate Foreign Relations Committee (SFRC). Because of these requirements, usually there has to be some push from the White House (Halloran 2011), and this can take precious time away from domestic legislative priorities. Thus, transmittals can be costly, especially in the face of expected opposition. Indeed, in 1995 when President Clinton wanted to transmit the UN Convention on the Rights of the Child to the Senate, Jessie Helms, who chaired the SFRC, and 26 cosponsors introduced a resolution urging him to not transmit the Convention. Such opposition can be distracting or politically harmful for the President. Furthermore, because the President usually endorses the treaty in the transmittal letter, he may incur a reputational cost by transmitting treaties that stall (Krutz and Peake 2009:140). Dealing with treaties thus involves political costs, and withholding transmittal can conserve political capital.

For the Senate, floor time is of the essence. After transmittal, the SFRC must hold a meeting on the treaty, and eventually issue its own analysis and recommendation, and (if it has enough support) pass it out of committee. The treaty then has to be scheduled for debate, possible amendments, and a vote. To gain Senate advice and consent, the treaty must pass with at least a two-thirds majority. Crucial to differentiating the opportunity cost argument from a straight veto player model, the Senate rules for debate and passage enable opponents to increase the time expended on a treaty, even if they do not have the ability to vote it down on the floor. Dealing with a treaty thus ties up the SFRC time, but even more importantly, it could potentially take up scarce discretionary time on the Senate floor. Senators seek to maximize their reputational returns from the issues they spend time on, favoring issues that have broad appeal (Walker 1977:430). Before scheduling a treaty for debate and a vote, the relevant actors therefore have to consider the opportunity cost of dealing with the treaty: What else could the Senate accomplish with that time? Even if the Senate is not being productive in terms of passing legislation, what else does the Senate want to be seen focusing on at that moment? Even if there is strong support for a treaty, Senators may hold back if they anticipate serious and potentially time consuming opposition—opposition that can result in any number of procedural maneuvers that could take up costly time in the Senate. This explains why so few treaties ever take up much floor time for debate. If senators expect them to take time, they do not schedule them.

Thus, both the President and the Senate face opportunity costs of fixed resources: Presidents are concerned with “misusing” political capital and opportunities. The Senators are protective of floor time, or how they are seen to be using their time by a public foremost focused on domestic matters. At the same time, the political benefits of treaty ratification are uncertain. Treaty ratification is often invisible, because the media rarely covers such events and whatever benefits treaties may bring may never be attributed to the treaty advocates directly.

The implication of these political calculations is central to our argument: Contrary to standard assumptions of international relations, the decision to push a treaty through the advice and consent process may be less about an isolated examination of costs and benefits of the treaty itself than about the political benefit of spending time on the treaty relative to the benefit of other possible agenda activity that may produce important domestic legislation such as health-care reform, for example. In other words: Senate advice and consent and, by association, transmittal decisions depends on the associated legislative opportunity cost.

The opportunity cost can manifest itself for many types of treaties. Even nondivisive treaties require some Presidential attention and Senate floor time to move through the process (Johnson 2010), and therefore even these may fall by the wayside, which is of course even more likely to occur if they are not considered particularly vital. More important treaties might also be affected by the opportunity cost, however. Even if opponents might not command the requisite 1/3 of Senators to block the treaty, their willingness to obstruct it (even the threat to do so) may impose such high costs in terms of time that supporters are reluctant to spend time on it when they have many competing priorities. In a time-constrained Senate, minimal winning coalitions that reach supermajority status have become less important. Each piece of legislation must compete with all other legislation and having only a minimum backing can deprioritize legislation on the agenda, slowing it down (Oppenheimer 1985:410). And although the Senate can use a cloture vote to end filibustering and technically should be able to do so easily if the treaty commands two-thirds support, Senators may be reluctant to push for treaties that push these boundaries (for example, by objecting to a unanimous consent request (Heitshusen 2013:4)).

#### Opposition is guaranteed. NewSpace companies will lobby for their survival against the PTD and smear it as an unworkable doctrine.

GC 17 [GC Magazine; Autumn 2017; Business thinking, In-house management, Published by legal500; “The new space race,” <https://www.legal500.com/gc-magazine/feature/the-new-space-race/>] brett

The upshot is that the ability to engage with legislators and policymakers will be essential for the long-term viability of companies like Planetary Resources.

‘We’re seeing already that with a regulatory framework laid out for a very quickly growing and expanding sector, there’s a lot of opportunity for policy engagement. That’s equally true in other countries too, which are either enacting their first national space laws or overhauling them,’ says Israel.

Before Israel joined the company, Planetary Resources was heavily involved in lobbying the US Congress to support the Spurring Private Aerospace Competitiveness and Entrepreneurship Act – better known as the SPACE Act.

That piece of legislation explicitly granted permission to US entities to ‘engage in the commercial exploration and exploitation of “space resources”.’ But the international community remains divided over whether the SPACE Act runs contrary to the obligations imposed on the US under the Outer Space Treaty.

‘The Americans are a sovereign state and according to their international treaty commitments, it’s hard to say that their domestic law is compatible with international law,’ says Smith.

Lobbying, both at a domestic and international level, stands to become increasingly critical, particularly as the US is in the process of crafting a framework for supervising non-governmental space activities, while ensure conformity with the Outer Space Treaty.

image of cartoon Mars Rover

‘It is incumbent on Congress to use the 50-year anniversary of the Outer Space Treaty to properly determine our actual international obligations, decide if specific articles in the Treaty are self-executing or not, and ensure that our domestic policy moving forward creates an environment that provides certainty for industry while protecting our national security,’ said Senator Ted Cruz, earlier this year.

‘The design and objectives in doing this must not only be to implement the government’s obligations, but to do so in a way that is not unduly burdensome on emerging space activities,’ adds Israel.

‘This is particularly relevant when the exact contours of how the activity will be carried out are not known, which makes it imperative that the regulators do not get too far ahead of the technology and make guesses about how it will be done, what is feasible, then lock in standards that are ultimately irrelevant and unworkable.’

#### Prevents existential climate disaster.

Moncrief ’11-11 [Aliki; 2021; executive director of Florida Conservation Voters; Orlando Sentinel, “Build Back Better Act would help in climate crisis,” https://www.orlandosentinel.com/opinion/guest-commentary/os-op-climate-change-congress-act-now-20211111-44u6bgyn5fdvnp3eqievkebqpe-story.html]

Last week, Congress passed the Infrastructure Investment and Jobs Act. This bipartisan bill will address upgrades to things like our transportation system, rural broadband, public transit, and clean-water infrastructure. These are badly needed, overdue investments that will make our communities more resilient to the climate impacts we are already seeing. But we know much more is needed.

It’s not enough to just respond to extreme weather — we need to cut the pollution driving it in the first place. That’s why Congress must also pass the Build Back Better Act, the most transformational climate and jobs legislation in our nation’s history. By investing in clean energy and things like electric vehicles and more energy-efficient homes and businesses, we can stop making the problem worse and avoid a growing disaster. We don’t have time for half measures, and Floridians know it — more than 75% of registered voters in the state support bold congressional action on climate change.

The Build Back Better Act takes bold steps to dramatically reduce climate pollution for everyone. But it also centers those who have been disproportionately impacted by this crisis by taking steps to address the decades of unchecked environmental injustice, ensuring at least 40% of the benefits of this bill go to those communities hardest hit by pollution and climate change.

Building a clean energy economy is an investment that will pay dividends for families today and for generations to come. Preventing the most catastrophic hurricanes, floods and heat waves will help ensure that we still bring people from all over the world to our beaches, the Everglades, and every amazing destination across our state that supports our multi-billion dollar tourism industry.

And the robust clean-energy investments in the Build Back Better Act will create millions of good-paying jobs for Floridians in every corner of our state. Florida already ranks fourth in the nation for clean-energy employment, and this legislation would help this industry grow exponentially by tapping into the Sunshine State’s solar power potential.

Orlando has some great members of Congress who understand that climate change is an existential threat to our state and they ran on being a part of the solution to this crisis. Now, we are counting on them to take bold action and pass the Build Back Better Act. This is a win-win-win that creates jobs, lowers energy bills for Floridians, and begins to address the climate crisis at the same time.

#### Warming is a much higher risk of war.

Dr. Michael T. Klare 20, Five Colleges Professor of Peace and World Security Studies at Hampshire College, Ph.D. from the Graduate School of the Union Institute, BA and MA from Columbia University, Member of the Board of Director at the Arms Control Association, Defense Correspondent for The Nation, “How Rising Temperatures Increase the Likelihood of Nuclear War”, The Nation, 1/13/2020, https://www.thenation.com/article/archive/nuclear-defense-climate-change/

Climbing world temperatures and rising sea levels will diminish the supply of food and water in many resource-deprived areas, increasing the risk of widespread starvation, social unrest, and human flight. Global corn production, for example, is projected to fall by as much as 14 percent in a 2°C warmer world, according to research cited in a 2018 special report by the UN’s Intergovernmental Panel on Climate Change (IPCC). Food scarcity and crop failures risk pushing hundreds of millions of people into overcrowded cities, where the likelihood of pandemics, ethnic strife, and severe storm damage is bound to increase. All of this will impose an immense burden on human institutions. Some states may collapse or break up into a collection of warring chiefdoms—all fighting over sources of water and other vital resources.

A similar momentum is now evident in the emerging nuclear arms race, with all three major powers—China, Russia, and the United States—rushing to deploy a host of new munitions. This dangerous process commenced a decade ago, when Russian and Chinese leaders sought improvements to their nuclear arsenals and President Barack Obama, in order to secure Senate approval of the New Strategic Arms Reduction Treaty of 2010, agreed to initial funding for the modernization of all three legs of America’s strategic triad, which encompasses submarines, intercontinental ballistic missiles, and bombers. (New START, which mandated significant reductions in US and Russian arsenals, will expire in February 2021 unless renewed by the two countries.) Although Obama initiated the modernization of the nuclear triad, the Trump administration has sought funds to proceed with their full-scale production, at an estimated initial installment of $500 billion over 10 years.

Even during the initial modernization program of the Obama era, Russian and Chinese leaders were sufficiently alarmed to hasten their own nuclear acquisitions. Both countries were already in the process of modernizing their stockpiles—Russia to replace Cold War–era systems that had become unreliable, China to provide its relatively small arsenal with enhanced capabilities. Trump’s decision to acquire a whole new suite of ICBMs, nuclear-armed submarines, and bombers has added momentum to these efforts. And with all three major powers upgrading their arsenals, the other nuclear-weapon states—led by India, Pakistan, and North Korea—have been expanding their stockpiles as well. Moreover, with Trump’s recent decision to abandon the Intermediate-Range Nuclear Forces (INF) Treaty, all major powers are developing missile delivery systems for a regional nuclear war such as might erupt in Europe, South Asia, or the western Pacific.

### Case

**At: hacking – read the cite, it literally says “opinion”**

**Hacking is nonunique**

**Never happened – eempirics confirnm**

### AT: Debris

#### 1] No Kessler syndrome.

**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).

#### 2] Alt causes to debris – small sats, meteoroids, EMPs.

Kelley, Electrical and Computer Engineering @ Cornell, et al. 12

[Michael C.; Stephanie Pancoast, Electrical and Computer Engineering @ Cornell; Sigrid Close, Aeronautics and Astronautics @ Stanford; Zhenzhen Wang, Physics and Astronomy @ UIowa: “Analysis of electromagnetic and electrostatic effects of particle impacts on spacecraft.” Elsevier Ltd. doi:10.1016/j.asr.2011.12.023]//AD

\*Hypervelocity means over 11km/s

Spacecraft are continually subject to impacts by meteoroids and space junk. The space shuttle and the International Space Station have been repeatedly hit and a space tether was severed by such an event. Such impacts can clearly have mechanical effects on spacecraft, but in recent years, evidence has arisen that electrical effects may be more important. Two types of effects are possible (Close et al., 2010). High-velocity impacts result in vaporization/ionization of the incoming particle and spacecraft material as well. This material is thought to be ejected as energetic ions that subsequently draw out electrons (Krueger, 1996; Ratcliff et al., 1997a,b). The result is that the vehicle potential initially drops sharply, rises again as the electron emission overcompensates positively, and then returns to its prior state by ambient plasma collection. These events may be intense enough to create an Electrostatic Discharge (ESD), which could damage spacecraft electronics. The expanding ions can separate from the electrons by a Debye length, after which an electric field builds up to draw out the electrons. The two plasma constituents then oscillate about each other at the plasma frequency while, at the same time, the plasma expands at the ambipolar diffusion rate. This continues until electron ion collisions are sufficient to slow the expansion process to the collisional diffusion rate. As the expansion proceeds, the plasma frequency decreases, as does the frequency of the radiation generated. This electrostatic oscillation will act as an antenna and radiate electromagnetic waves, which propagate in and around the spacecraft in a phenomenon we call an Electromagnetic Pulse (EMP..We have compared observations of high-velocity impacts on the Cassini spacecraft with the theory of Close et al. (2010). We find excellent agreement with both the vehicle potential changes and the plasma oscillations for large, low-velocity particle impacts and for small, hypervelocity particles. When applied to particle impacts on earth-orbiting satellites, our first conclusion is that very high vehicle potential changes are possible for hyper-velocity metallic impacts on spacecraft ground, which could lead to ESD failures. We also find that an Electromagnetic Pulse will be generated and radiated by such impacts.

**3] No impact to debris---the risk to spacecraft is miniscule compared to normal mission hazards**

Lawrence M. **Wein 9**, Professor & Senior Fellow at Stanford’s Center for International Security and Cooperation, “Space debris: Assessing risk and responsibility,” *Advances in Space Research*, Volume 43, 2009, pp. 1372-1390

[Translated scientific notation to % probability in brackets]

More importantly, while our numerical results mimic earlier results (Liou and Johnson, 2005; Walker and Martin, 2004) that stressed the importance of postmission deorbiting, we do not necessarily agree with the claim that the only way to prevent future problems is to remove existing large intacts from space (Liou and Johnson, 2006, 2008). The divergence between our views and those in Liou and Johnson (2006, 2008) is perhaps due to the different performance metrics used. The root causes for alarm in Liou and Johnson (2006, 2008) appear to be the growth rate of fragments and the small increase in the rate of catastrophic collisions over the next 200 years (Liou and Johnson, 2008, Fig. 2). However, the great majority of catastrophic collisions in the SOI do not involve operational spacecraft, and are hazardous only in the sense that the fragments generated from such a collision could subsequently damage or destroy operational spacecraft. Therefore, we introduced the notion of the lifetime risk of an operational spacecraft as the primary performance metric. Our model predicts that the lifetime risk is <5x10^-4 [less than .0005%] over the next two centuries, and always stays <10^-3 [less than .001%] than if there is very high (>98%) spacecraft deorbiting compliance. These risks appear to be low relative to the immense cost and considerable technological uncertainty involved in removing large objects from space, are dwarfed by the ~20% historical mission-impacting (but not necessarily mission-ending) failure rate of spacecraft (Frost and Sullivan, 2004), and could be overestimated if improved traffic management techniques lower future collision risks (Johnson, 2004). Hence, the need to bring large objects down from space does not appear to be as clear cut as suggested in Liou and Johnson (2006, 2008). Nonetheless, our model does not incorporate the possibility of intentional catastrophic collisions (ASAT tests, space wars) that could conceivably occur in the future. In addition, Fig. 5 considers only catastrophic collisions, whereas noncatastrophic intact-fragment collisions could easily disable an operational spacecraft. If the operational lifetime risk is modified to include noncatastrophic collisions with fragments >= 10cm, then the sustainable risk rises by ~50%: it increases from 2.19x10^-2 [.0219%] to 3.09x10^-2 in the base case, and increases from 4.91x10^-4 [.000491%] to 7.94x10^-4 in the full compliance case. Moreover, if fragments >= 1 cm (rather than >= 10 cm) are harmful to spacecraft (Johnson, 2004), then we (as well as other researchers) could be underestimating the risk.

#### 4] Less debris and existing guidelines solve

Lewis 15 (Hugh, Senior Lecturer in Aerospace Engineering at the University of Southampton, “Space debris, Kessler Syndrome, and the unreasonable expectation of certainty.” Room, <https://room.eu.com/article/Space_debris_Kessler_Syndrome_and_the_unreasonable_expectation_of_certainty>, Accessed 8/10/19, JMoore)

There is now widespread awareness of the space debris problem amongst policymakers, scientists, engineers and the public. Thanks to pivotal work by J.C. Liou and Nicholas Johnson in 2006 we now understand that the continued growth of the debris population is likely in the future even if all launch activity is halted. The reason for this sustained growth, and for the concern of many satellite operators who are forced to act to protect their assets, are collisions that are expected to occur between objects – satellites and rocket stages – already in orbit. In spite of several commentators warning that these collisions are just the start of a collision cascade that will render access to low Earth orbit all but impossible – a process commonly referred to as the ‘Kessler Syndrome’ after the debris scientist Donald Kessler – the reality is not likely to be on the scale of these predictions or the events depicted in the film Gravity. Indeed, results presented by the Inter-Agency Space Debris Coordination Committee (IADC) at the Sixth European Conference on Space Debris show an expected increase in the debris population of only 30% after 200 years with continued launch activity. Collisions are still predicted to occur, but this is far from the catastrophic scenario feared by some. Constraining the population increase to a modest level can be achieved, the IADC suggested, through widespread and good compliance with existing space debris mitigation guidelines, especially those relating to passivation (whereby all sources of stored energy on a satellite are depleted at the end of its mission) and post-mission disposal, such as de-orbiting the satellite or re-orbiting it to a graveyard orbit. Nevertheless, the anticipated growth of the debris population in spite of these robust efforts merits the investigation of additional measures to address the debris threat, according to the IADC.

#### 5] Global ADR development already exists – solves.

Zachary Keck, Wohlstetter Public Affairs Fellow at the Nonproliferation Policy Education Center, 6-17-2018, "Space Is Truly the Final Frontier (For the Next Great War)," National Interest, https://nationalinterest.org/blog/the-buzz/space-truly-the-final-frontier-the-next-great-war-26284

The first type of dual-use spacecraft—called active debris removal (ADR)—are designed to deal with the rapidly growing problem of space debris. One preliminary ADR example came from China in June 2016 when it launched the "Aolong-1" spacecraft, which was a demonstrator device. These ADR spacecraft—which are also being developed by the United States, European Union, and Russia— can retrieve debris floating in space. Then, the ADR spacecraft bring the debris down to re-enter the atmosphere, destroying it by the intense frictional heat. Alternatively, they can also instead place the debris in graveyard orbits to reduce the probability of colliding with operational satellites.

ADR spacecraft are unavoidable given the growing nature of the space debris problem. Previous estimates have suggested that starting in 2020 the world would need to remove an average of five massive objects (such as decommissioned satellites and derelict rockets) from low earth orbit (LEO) each year to deal with the problem. Others have estimated that the number is closer to ten that will need removal. However, as Chow points out, these estimates fail to consider the massive expansion in the number of LEO satellites entering space. As of August 31, 2017, only 1,071 LEO satellites were orbiting the earth. Over the next decade, however, between 14,000 and 16,000 additional LEOs are expected to be launched. This makes the space debris problem more difficult, and debris removal spacecraft that much more important.

The problem is that the same spacecraft that can remove debris can also be used as “space stalkers.” Space stalkers, as Chow previously described them, "could be placed on orbit in peacetime and maneuvered to tailgate U.S. satellites during a crisis. At a moment's notice, they could simultaneously attack multiple critical satellites from such close proximity that the United States would not have time to prevent damage." Since ADR spacecraft are designed to get close to and remove debris, they necessarily have the capability to get close to and snatch essential satellites that U.S. military relies on.

Additionally, ADR spacecraft are not the only dual-use problem. Many of the same countries developing ADR capabilities are also building maintenance spacecraft. These spacecraft—called on-orbit servicing (OOS)—also maneuver themselves to be in physical contact with satellites to perform any number of maintenance tasks. These tasks include, "high-resolution inspection; correction of some types of mechanical anomalies, such as solar array and antenna deployment malfunctions; relocation and other orbital maneuvers; installation of attachable payloads to enable upgrades or new capabilities; and refueling to extend the service life of satellites."

Once again, the issue is that these OOS spacecraft can be quickly repurposed to take out critical satellites during a crisis or conflict. In fact, these OOS spacecraft are even better space stalkers than ADR ones because they have more advanced rendezvous and robotic capabilities.

This is not some distant problem. Chow notes that the first ADR and OOS spacecraft are likely to become operational sometime in the early part of the next decade. “In effect,” he writes, “weaponization of space will happen by default in the early 2020s and beyond and will be unavoidable and irreversible.” It will only grow worse with time as more countries launch ADR and OOS spacecraft and their capabilities for rendezvous and proximity operations improve.

#### 6] --No miscalc from satellite disruptions or space dust -- empirically denied.

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.

#### 7] --No one’s going to war over a downed satellite

Bowen 18 [Bleddyn Bowen, Lecturer in International Relations at the University of Leicester. The Art of Space Deterrence. February 20, 2018.<https://www.europeanleadershipnetwork.org/commentary/the-art-of-space-deterrence/>] brett

Space is often an afterthought or a miscellaneous ancillary in the grand strategic views of top-level decision-makers. A president may not care that one satellite may be lost or go dark; it may cause panic and Twitter-based hysteria for the space community, of course. But the terrestrial context and consequences, as well as the political stakes and symbolism of any exchange of hostilities in space matters more. The political and media dimension can magnify or minimise the perceived consequences of losing specific satellites out of all proportion to their actual strategic effect.