## 1

### Generic

#### Interp: All debaters must disclose all broken positions on the NDCA LD wiki.  The disclosure must include tags, analytics, complete citations, including page numbers, and the full text from each piece of evidence. The disclosure must occur within 30 minutes of the start of the round.

#### Violation:

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application

Description automatically generated

#### Standards –

#### 1] Quality research: disclosure promotes quality research and in-depth engagement.

Nails 13. Jacob Nails debated on the high school LD national circuit and now debates for Georgia State University, 10-10-2013, "A Defense of Disclosure (Including Third-Party Disclosure) by Jacob Nails," NSD Update, <http://nsdupdate.com/2013/10/10/a-defense-of-disclosure-including-third-party-disclosure-by-jacob-nails/> //RS

I fall squarely on the side of disclosure. I find that the largest advantage of widespread disclosure is the educational value it provides. First, disclosure streamlines research. Rather than every team and every lone wolf researching completely in the dark, the wiki provides a public body of knowledge that everyone can contribute to and build off of. Students can look through the different studies on the topic and choose the best ones on an informed basis without the prohibitively large burden of personally surveying all of the literature. The best arguments are identified and replicated, which is a natural result of an open marketplace of ideas. Quality of evidence increases across the board. In theory, the increased quality of information could trade off with quantity. If debaters could just look to the wiki for evidence, it might remove the competitive incentive to do one’s own research. Empirically, however, the opposite has been true. In fact, a second advantage of disclosure is that it motivates research. Debaters cannot expect to make it a whole topic with the same stock AC – that is, unless they are continually updating and frontlining it. Likewise, debaters with access to their opponents’ cases can do more targeted and specific research. Students can go to a new level of depth, researching not just the pros and cons of the topic but the specific authors, arguments, and advocacies employed by other debaters. The incentive to cut author-specific indicts is low if there’s little guarantee that the author will ever be cited in a round but high if one knows that specific schools are using that author in rounds. In this way, disclosure increases incentive to research by altering a student’s cost-benefit analysis so that the time spent researching is more valuable, i.e. more likely to produce useful evidence because it is more directed. In any case, if publicly accessible evidence jeopardized research, backfiles and briefs would have done LD in a long time ago.

#### 2] Accessibility – Not all debaters have access to research libraries like JSTOR or Lexis Nexis. Additionally, not all debates have access to coaches who can explain what Kant offense looks like or functions like. Disclosing full text is uniquely key to maximize clash among small schools and controls the internal link to your solvency. Limits the activity to big schools and kills participation.

#### 3] Clash – disclosing solves predictability and allows debaters to prep for arguments before tournaments. Means, 1NC and 1AR blocks will become better because debaters can more easily form a coherent strategy. Strategy outweighs because it allows for in-depth argumentation and coherent rebuttals. Key to fairness because without strategy, debaters couldn’t win. Key to education because it creates better argumentation.

**Education – only portable impact from debate – we care about what we learn rather than if we were fair**

**Fairness - Constitutive to the judge to decide the better debater- only fairness is in your jurisdiction because it skews decision making**

**Drop the Debater – sets a precedent that debaters wont be abusive and DTA is the same since you drop the aff**

## 2

#### CP: The United States federal government should

#### Establish a national space debris removal program;

#### Engage the commercial sector in space debris removal;

#### Establish special funds at the expense of parties who generate debris;

#### Prioritize transparency in space debris removal.

#### US debris removal solves best — it generates international follow on BUT avoids the downfalls of international cooperation that make solvency impossible.

Ansdell ’10 (Megan; is a graduate student at the George Washington University Elliot School of International Affairs, focusing on space policy; *Active Space Debris Removal: Needs, Implications, and Recommendations for Today’s Geopolitical Environment*; <https://jpia.princeton.edu/sites/jpia/files/space-debris-removal.pdf>; accessed 8/29/19; Julia/MSCOTT)//ww pbj

VI. US Leadership by Example Need to Initiate Unilateral Action International cooperation in space has rarely resulted in cost-effective or expedient solutions, especially in politically-charged areas of uncertain technological feasibility. The International Space Station, because of both political and technical setbacks, has taken over two decades to deploy and cost many billions of dollars—far more time and money than was originally intended. Space debris mitigation has also encountered aversion in international forums. The topic was brought up in COPUOS as early as 1980, yet a policy failed to develop despite a steady flow of documents on the increasing danger of space debris (Perek 1991). In fact, COPUOS did not adopt debris mitigation guidelines until 2007 and, even then, they were legally non-binding. Space debris removal systems could take decades to develop and deploy through international partnerships due to the many interdisciplinary challenges they face. Given the need to start actively removing space debris sooner rather than later to ensure the continued benefits of satellite services, international cooperation may not be the most appropriate mechanism for instigating the first space debris removal system. Instead, one country should take a leadership role by establishing a national space debris removal program. This would accelerate technology development and demonstration, which would, in turn, build-up trust and hasten international participation in space debris removal. Possibilities of Leadership As previously discussed, a recent NASA study found that annually removing as little as five massive pieces of debris in critical orbits could significantly stabilize the long-term space debris environment (Liou and Johnson 2007). This suggests that it is feasible for one nation to unilaterally develop and deploy an effective debris removal system. As the United States is responsible for creating much of the debris in Earth’s orbit, it is a candidate for taking a leadership role in removing it, along with other heavy polluters of the space environment such as China and Russia. There are several reasons why the United States should take this leadership role, rather than China or Russia. First and foremost, the United States would be hardest hit by the loss of satellites services. It owns about half of the roughly 800 operating satellites in orbit and its military is significantly more dependent upon them than any other entity (Moore 2008). For example, GPS precision-guided munitions are a key component of the “new American way of war” (Dolman 2006, 163-165), which allows the United States to remain a globally dominant military power while also waging war in accordance with its political and ethical values by enabling faster, less costly war fighting with minimal collateral damage (Sheldon 2005). The U.S. Department of Defense recognized the need to protect U.S. satellite systems over ten years ago when it stated in its 1999 Space Policy that, “the ability to access and utilize space is a vital national interest because many of the activities conducted in the medium are critical to U.S. national security and economic well-being” (U.S. Department of Defense 1999, 6). Clearly, the United States has a vested interest in keeping the near-Earth space environment free from threats like space debris and thus assuring U.S. access to space. Moreover, current U.S. National Space Policy asserts that the United States will take a “leadership role” in space debris minimization. This could include the development, deployment, and demonstration of an effective space debris removal system to remove U.S. debris as well as that of other nations, upon their request. There could also be international political and economic advantages associated with being the first country to develop this revolutionary technology. However, there is always the danger of other nations simply benefiting from U.S. investment of its resources in this area. Thus, mechanisms should also be created to avoid a classic “free rider” situation. For example, techniques could be employed to ensure other countries either join in the effort later on or pay appropriate fees to the United States for removal services. Recommendations for Leadership in Space Debris Removal Going forward, the U.S. government should engage the commercial sector in space debris removal. Government contracts with several commercial firms would create a competitive environment, encouraging innovation and cost minimization. Having several companies working on the problem at the same time would also accelerate remediation as several critical orbits could be addressed at once. Furthermore, early investments in a domestic space debris removal industry would give the United States a head start in what may become a critical industry over the coming decades. The aforementioned 2009 International Conference on Orbital Debris Removal, co-hosted by DARPA and NASA, suggests that these two agencies could lead U.S. government efforts in space debris removal. However, it is important to recognize that DARPA and NASA are driven by very different motives: one is a civilian space agency, while the other is a defense research agency. Failure to appreciate these differences when establishing mission requirements could lead to a situation like that of the National Polar Environmental Satellite System (NPOESS), where the attempt to combine civil and military requirements into a single satellite resulted in doubling project costs, a launch delay of five years, and ultimately splitting the project into two separate programs (Clark 2010). Furthermore, any system developed through a joint NASA-DARPA partnership would need to be transferred to an operational agency, as both NASA and DARPA are research and development entities. The U.S. Air Force, as it is the primary agency responsible for national security space operations, is a possible option. Funding the development of a national space debris removal system carries risks because, due to the nascent state of the field, detailed cost-benefit estimates have not yet been carried out. The Space Frontier Foundation, however, proposes that the government should establish special funds at the expense of parties who generate debris (Dunstan and Werb 2009). Suggested mechanisms for raising the funds include charging fees for U.S. launches based on the debris potential of the mission, with the size of the fee determined by relevant factors such as the mass of the anticipated debris resulting from the mission and the congestion of the orbit into which the space object is being launched. Satellite manufacturers, operators, and service providers could all share responsibility for payment into such funds. Once debris removal systems are in operation, additional funds could also come from service fees. For example, entities that created debris could pay a specified amount to removal providers in return for the service rendered. Any national space debris removal program must also be kept transparent with ongoing international dialogue in forums such as COPUOS so that other nations can build-up trust in the effectiveness and efficiency of the program. A proven debris removal program will result in more productive discussions in these international forums. VII. Conclusion If the United States and other powerful governments do not take steps now to avert the potentially devastating effects of space debris, the issue risks becoming stalemated in a manner similar to climate change. Given the past hesitation of international forums in addressing the space debris issue, unilateral action is the most appropriate means of instigating space debris removal within the needed timeframe. The United States is well poised for a leadership role in space debris removal. Going forward, the U.S. government should work closely with the commercial sector in this endeavor, focusing on removing pieces of U.S. debris with the greatest potential to contribute to future collisions. It should also keep its space debris removal system as open and transparent as possible to allow for future international

## 3

#### Updated reconciliation bill passes now – new Manchin agenda funds climate fully, gets Sinema on board, and progressives give in because of midterms pressure

Everett & Wu 3/2 [Burgess Everett - co-congressional bureau chief for POLITICO, specializing in the Senate since 2013, Nicholas Wu - congressional reporter at POLITICO, “Dems agonize over Manchin's wish list: Taxes, prescription drugs, climate cash”, 03-02-2022, Politico, https://www.politico.com/news/2022/03/02/joe-manchin-democrat-bill-taxes-00013246]//pranav

Joe Manchin is once again setting the agenda for Democrats and says he’s willing to make a deal. They’re listening — cautiously.

Hours after President Joe Biden laid out what he hoped to salvage from Democrats’ defunct “Build Back Better” social spending plan, Joe Manchin quickly assembled a counteroffer. It might amount to deja vu for Democrats, many of whom still feel burned from last year’s debacle, yet many in the party are willing to entertain any shot they have to unify while they still have control of Congress.

“Here’s the thing. I’ve always been open to talking to people okay? But they just don’t want to hear,” Manchin said in a Wednesday interview.

The West Virginia centrist laid out a basic party-line package that could win his vote in the interview, to lower the deficit and enact some new programs — provided they are permanently funded. It may be Democrats’ best and last chance to get at least some of their major domestic priorities done before the midterm election, even as some leading liberals acknowledged any potential deal would not come close to the $1.7 trillion package Manchin spurned in December.

Manchin said that if Democrats want to cut a deal on a party-line bill using the budget process to circumvent a Republican filibuster, they need to start with prescription drug savings and tax reform. He envisions whatever revenue they can wring out of that as split evenly between reducing the federal deficit and inflation, on the one hand, and enacting new climate and social programs, on the other — “to the point where it’s sustainable.”

“If you do that, the revenue producing [measures] would be taxes and drugs. The spending is going to be climate,” Manchin said.

“And the social issues, we basically have to deal with those” with any money that’s left, he added. As far as whether he thinks his party finally understands his parameters for joining the talks, he said that Democrats “know where I am. They just basically think that I’m going to change.”

Negotiating with Manchin isn’t exactly Democrats’ favorite topic after nearly a year of back and forth. Asked about whether he can envision a passable deal, Sen. Mark Warner (D-Va.) responded: “I was hoping you would were going to, like, ask me to expound about Ukraine.”

“I’ve got a lot of respect for him. And hope springs eternal,” Warner said. The two are often aligned in centrist deal-making groups.

Manchin, who also chairs the Senate Energy Committee, said that the climate portion of any theoretical bill will look different now that Russia is invading Ukraine. He’s calling for the U.S. to ban oil imports from Russia and ramp up domestic energy production, including fossil fuels. He would support big clean energy investments in a potential deal, he said, but wants domestic oil, gas and coal production to still be a big part of the mix.

“You want to be able to defend your people, have reliable, dependable and affordable power? You have to use ‘all of the above,’” Manchin said, defending his support for clean energy investments. “They say ‘Manchin doesn’t care … he’s killing the environment.’ I’m not killing anything.”

Though he prefers everything in Congress to be bipartisan, Manchin said he has “come to that conclusion” that changing the tax code to make the rich and corporations pay their fair share can only be done with Democratic votes. To enact Manchin’s vision, Democrats would also have to bargain with Sen. Kyrsten Sinema (D-Ariz.) who last year steered the party toward surtaxes and corporate minimum taxes — and away from raising individual and corporate tax rates.

Sinema said Wednesday that the tax package negotiated last year, which shied away from raising those rates, would more than pay for what Manchin is talking about.

“Any new, narrow proposal — including deficit reduction — already has enough tax reform options to pay for it. These reforms are supported by the White House, target tax avoidance, and ensure corporations pay taxes, while not increasing costs on small businesses or everyday Americans already hurting from inflation,” said Hannah Hurley, a spokesperson for Sinema.

Progressives might take a while to warm to it. Asked about Manchin’s hopes of diverting new revenues to deficit reduction and inflation, Sen. Bernie Sanders (I-Vt.) griped: “I don’t care what he wants. We’re talking about what the American people want. He doesn’t like it, he can vote against it, that’s his business.”

And Rep. Barbara Lee (D-Calif.) scoffed, saying it would not satisfy many of the House’s frustrated liberals. She seemed more interested in still trying to change Manchin’s mind on the expanded child tax credit and other domestic programs than in accepting his blueprint.

“I would hope he would reconsider, and realize how many people are being left behind,” Lee said. “We’ve got to keep going and try to get everything that we can get.”

Despite some lawmakers’ aggravation with Manchin, other progressives were willing to entertain just about whatever they could get through with only 50 Senate Democrats and a slim House majority. After all, the midterms are now eight months away; recreating the momentum to put a big bill on the floor may take months.

Sen. Elizabeth Warren (D-Mass.) put it this way: “There’s so much that we all agree on, that we ought to be able to get a deal.” And Rep. Katie Porter (D-Calif.), the deputy chair of the Progressive Caucus, said she’s “open” to Manchin’s energy proposal provided “it’s paired with a real meaningful commitment, and actual movement.”

#### Private space exploration has united democratic support – the plan causes backlash – SPACE act proves

Smith ’18 [Lamar, American politician and lobbyist who served in the United States House of Representatives for Texas's 21st congressional district for 16 terms, a district including most of the wealthier sections of San Antonio and Austin, as well as some of the Texas Hill Country, “Lamar Smith: Space commercialization is the future”, Austin-American Statesman, https://amp.statesman.com/amp/10154753007]//pranav

As part of Innovation Week in the House of Representatives, I joined House Majority Leader Kevin McCarthy in passing the Spurring Private Aerospace Competitiveness and Entrepreneurship Act of 2015, or SPACE Act. Almost 50 Democrats joined Republicans in easily passing our bill with broad bipartisan support.

This legislation gives space companies the stability and certainty they need to operate successfully, safely and competitively in a global market. It’s one of several bills the Science Committee I chair has produced this year to support our nation’s leadership in space.

Space commercialization is the future of space. The SPACE Act encourages private sector companies to launch rockets, take risks and shoot for the heavens.

We live in exciting times. In addition to the work being done at NASA Johnson Space Center, this new generation of private space companies is making its mark on the Lone Star State. SpaceX, which is building a launch facility near Brownsville, is working in partnership with NASA to once more launch American astronauts on American rockets from American soil. And Amazon-founder Jeff Bezos’ Blue Origin just completed its first successful test of its New Shepard vehicle in West Texas. XCOR Aerospace, whose development and manufacturing operations are located in Midland, is currently putting the finishing touches on its Lynx vehicle that will take civilians on 30-minute rides into suborbital space.

These are just a few of the Texas success stories that the American commercial space industry is making possible. Many more companies across the country are launching satellites that support our technology economy, developing rocket engines and designing new vehicles for space transport and travel.

The best is yet to come — but only if we support our American space partners. Other countries like China and India are aggressively expanding their space programs and we risk losing the space leadership we’ve had for more than 50 years. Private space companies are working to end our reliance on Russia. We currently pay $70 million per seat per flight for Russia to take our astronauts to the International Space Station.

#### Manchin’s climate proposal is still a massive investment – their ev underestimates it.

Davenport ‘21 [Coral, covers energy and environmental policy, with a focus on climate change, from The Times's Washington bureau, “This Powerful Democrat Linked to Fossil Fuels Will Craft the U.S. Climate Plan”, 09-19-2021 (UPDATED ON 10/08/2021), New York Times, https://www.nytimes.com/2021/09/19/climate/manchin-climate-biden.html]//pranav

“There is no question that climate change is real or that human activities are driving much of it,” he co-wrote in a 2019 opinion article in the Washington Post with Senator Lisa Murkowski, Republican of Alaska. But Mr. Manchin has also made clear that he does not support legislation that would eliminate the burning of those fossil fuels — particularly coal and natural gas. Now, Mr. Manchin is preparing to write the climate portion of the budget bill in a way that would keep natural gas flowing to power plants, according to people familiar with his thinking. The sources spoke on the condition of anonymity because they were not authorized to publicly discuss it. Mr. Manchin does support some climate measures proposed by Mr. Biden, but is working to ensure they protect and extend the use of coal and natural gas. He agrees with the president that communities dependent on fossil fuels deserve financial support as the country transitions to green energy. And he is a booster of carbon capture sequestration, a nascent technology that collects carbon emissions from smokestacks and buries them in the ground. If it were to become commercially viable, that technology could allow industries to continue to burn coal, oil and gas. But the most powerful climate mechanism in the budget bill — and the one that Mr. Manchin intends to reshape — is a $150 billion program designed to replace most of the nation’s coal- and gas-fired power plants with wind, solar and nuclear power over the next decade. Known as the Clean Electricity Performance Program, it would pay utilities to ratchet up the amount of power they produce from zero-emissions sources, and fine those that don’t. As envisioned by the White House and House Democrats, the carrot-and-stick approach could transform the nation’s electricity sector, the second-largest source of greenhouse pollution after transportation. The policy is crucial to Mr. Biden’s goal of producing 80 percent of electricity from zero-carbon sources by 2030 and 100 percent clean electricity by 2035, analysts say. It could also help lower pollution from automobiles since electric cars and trucks would be drawing power from a grid powered by clean energy. Fossil fuel lobbyists, utility executives and West Virginia business leaders have been meeting, calling and emailing Mr. Manchin and his staff in an effort to shape the bill. Several said in recent interviews that they expect that Mr. Manchin’s plan will reward companies that increase their supply of clean energy — but the incentives will be smaller and require less. Under the version supported by the White House and House Democrats, companies would qualify for payments if they increase the amount of clean electricity they supply to customers by 4 percent a year through 2030. Mr. Manchin is likely to lower that requirement to 3 percent a year or less, said two people familiar with the matter. That would still be an improvement over business as usual: American electric utilities increased their use of zero-carbon power sources by roughly 1.4 percentage points a year over the last five years. That use increased about 2.3 percentage points in 2020. “While this will fall far short of what President Biden wants, it could still be the largest action Congress has ever taken on climate change,” Mr. Aldy, the former Obama climate adviser, said.

**Warming causes extinction & turns every impact – no adaptation & each degree is worse**

**Krosofsky ’21** [Andrew, Green Matters Journalist, “How Global Warming May Eventually Lead to Global Extinction”, Green Matters, 03-11-2021, https://www.greenmatters.com/p/will-global-warming-cause-extinction]//pranav

Eventually, yes. **Global warming will invariably result in the mass extinction of millions of different species,** humankind included. In fact, **the Center for Biological Diversity says that global warming is currently the greatest threat to life on this planet**. **Global warming causes a number of detrimental effects on the environment that many species won’t be able to handle long-term**. Extreme weather patterns are shifting climates across the globe, eliminating habitats and altering the landscape. **As a result, food and fresh water sources are being drastically reduced**. Then, of course, **there are the rising global temperatures themselves, which many species are physically unable to contend with**. Formerly frozen arctic and antarctic regions are melting, increasing sea levels and temperatures. Eventually, **these effects will create a perfect storm of extinction conditions**. The melting glaciers of the arctic and the searing, **unmanageable heat indexes being seen along the Equator are just the tip of the iceberg, so to speak.** **The species that live in these climate zones have already been affected by the changes caused by global warming.** Take polar bears for example, whose habitats and food sources have been so greatly diminished that they have been forced to range further and further south. **Increased carbon dioxide levels in the atmosphere and oceans have already led to ocean acidification**. **This has caused many species of crustaceans to either adapt or perish and has led to the mass bleaching of more than 50 percent of Australia’s Great Barrier Reef**, according to National Geographic. According to the Center for Biological Diversity, the current trajectory of global warming predicts that more than 30 percent of Earth’s plant and animal species will face extinction by 2050. By the end of the century, that number could be as high as 70 percent. We won’t try and sugarcoat things, humanity’s own prospects aren’t looking that great either. According to The Conversation, **our species has just under a decade left to get our CO₂ emissions under control. If we don’t cut those emissions by half before 2030, temperatures will rise to potentially catastrophic levels. It may only seem like a degree or so, but the worldwide ramifications are immense.** The human species is resilient. We will survive for a while longer, even if these grim global warming predictions come to pass, **but it will mean less food, less water, and increased hardship across the world — especially in low-income areas and developing countries. This increase will also mean more pandemics, devastating storms, and uncontrollable wildfires**.

## Case

### AT: Space Debris

#### 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]//ww pbj

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 debris impact at every layer of space

Fange 17 (Daniel von Fange. Web Application Engineer. “Kessler Syndrome is Over Hyped,” *Braino*, 5/21/17, <http://braino.org/essays/kessler_syndrome_is_over_hyped/>) dwc 19)//ww pbj

Kessler Syndrome is overhyped. A chorus of online commenters great any news of upcoming low earth orbit satellites with worry that humanity will to lose access to space. I now think they are wrong. //// What is Kessler Syndrome? Here’s the popular view on Kessler Syndrome. Every once in a while, a piece of junk in space hits a satellite. This single impact destroys the satellite, and breaks off several thousand additional pieces. These new pieces now fly around space looking for other satellites to hit, and so exponentially multiply themselves over time, like a nuclear reaction, until a sphere of man-made debris surrounds the earth, and humanity no longer has access to space nor the benefits of satellites.//// It is a dark picture.//// Is Kessler Syndrome likely to happen? I had to stop everything and spend an afternoon doing back-of-the-napkin math to know how big the threat is. To estimate, we need to know where the stuff in space is, how much mass is there, and how long it would take to deorbit. //// The orbital area around earth can be broken down into four regions. //// Low LEO - Up to about 400km. Things that orbit here burn up in the earth’s atmosphere quickly - between a few months to two years. The space station operates at the high end of this range. It loses about a kilometer of altitude a month and if not pushed higher every few months, would soon burn up. For all practical purposes, Low LEO doesn’t matter for Kessler Syndrome. If Low LEO was ever full of space junk, we’d just wait a year and a half, and the problem would be over.///// High LEO - 400km to 2000km. This where most heavy satellites and most space junk orbits. The air is thin enough here that satellites only go down slowly, and they have a much farther distance to fall. It can take 50 years for stuff here to get down. This is where Kessler Syndrome could be an issue. /// Mid Orbit - GPS satellites and other navigation satellites travel here in lonely, long lives. The volume of space is so huge, and the number of satellites so few, that we don’t need to worry about Kessler here. //// GEO - If you put a satellite far enough out from earth, the speed that the satellite travels around the earth will match the speed of the surface of the earth rotating under it. From the ground, the satellite will appear to hang motionless. Usually the geostationary orbit is used by big weather satellites and big TV broadcasting satellites. (This apparent motionlessness is why satellite TV dishes can be mounted pointing in a fixed direction. You can find approximate south just by looking around at the dishes in your northern hemisphere neighborhood.) For Kessler purposes, GEO orbit is roughly a ring 384,400 km around. However, all the satellites here are moving the same direction at the same speed - debris doesn’t get free velocity from the speed of the satellites. Also, it’s quite expensive to get a satellite here, and so there aren’t many, only about one satellite per 1000km of the ring. Kessler is not a problem here. //// How bad could Kessler Syndrome in High LEO be? Let’s imagine a worst case scenario. //// An evil alien intelligence chops up everything in High LEO, turning it into 1cm cubes of death orbiting at 1000km, spread as evenly across the surface of this sphere as orbital mechanics would allow. Is humanity cut off from space? //// I’m guessing the world has launched about 10,000 tons of satellites total. For guessing purposes, I’ll assume 2,500 tons of satellites and junk currently in High LEO. If satellites are made of aluminum, with a density of 2.70 g/cm3, then that’s 839,985,870 1cm cubes. A sphere for an orbit of 1,000km has a surface area of 682,752,000 square KM. So there would be one cube of junk per .81 square KM. If a rocket traveled through that, its odds of hitting that cube are tiny - less than 1 in 10,000. ////// So even in the worst case, we don’t lose access to space. // Now though you can travel through the debris, you couldn’t keep a satellite alive for long in this orbit of death. Kessler Syndrome at its worst just prevents us from putting satellites in certain orbits. //// In real life, there’s a lot of factors that make Kessler syndrome even less of a problem than our worst case though experiment.//// Debris would be spread over a volume of space, not a single orbital surface, making collisions orders of magnitudes less likely.//// Most impact debris will have a slower orbital velocity than either of its original pieces - this makes it deorbit much sooner.//// Any collision will create large and small objects. Small objects are much more affected by atmospheric drag and deorbit faster, even in a few months from high LEO. Larger objects can be tracked by earth based radar and avoided.//// The planned big new constellations are not in High LEO, but in Low LEO for faster communications with the earth. They aren’t an issue for Kessler.//// Most importantly, all new satellite launches since the 1990’s are required to include a plan to get rid of the satellite at the end of its useful life (usually by deorbiting)//// So the realistic worst case is that insurance premiums on satellites go up a bit. Given the current trend toward much smaller, cheaper micro satellites, this wouldn’t even have a huge effect.

#### Alternative measures solve misclac from satellite takeout

Lambakis 01 (Steven Lambakis is a senior defense analyst at the National Institute for Public Policy and the author of On the Edge of Earth: The Future of American Space Power (University Press of Kentucky, 2001). “Space Weapons: Refuting the Critics” <http://www.hoover.org/publications/policy-review/article/6612>, Donnie)//ww pbj

In other words, it is not at all self-evident that a sudden loss of a communications satellite, for example, would precipitate a wider-scale war or make warfare termination impossible. In the context of U.S.-Russian relations, communications systems to command authorities and forces are redundant. Urgent communications may be routed through land lines or the airwaves. Other means are also available to perform special reconnaissance missions for monitoring a crisis or compliance with an armistice. While improvements are needed, our ability to know what transpires in space is growing — so we are not always in the dark.

#### Kessler’s Syndrome wrong and super long timeframe

Kurt 15 – JD-William & Mary Joseph Kurt, JD- William & Mary School of Law, BA-Marquette University, NOTE: TRIUMPH OF THE SPACE COMMONS: ADDRESSING THE IMPENDING SPACE DEBRIS CRISIS WITHOUT AN INTERNATIONAL TREATY, 40 Wm. & Mary Envtl. L. & Pol'y Rev. 305 (2015)//ww pbj

A. Practical Considerations: Feasible Solutions to the Space Debris Problem Are on Their Way One key question in assessing whether an international treaty is a requisite for solving the space debris problem is just how difficult it will be to fashion a remedy. The more complex and costly are feasible solutions, the more likely it is that a comprehensive regime is necessary to bind the various actors together. 93Link to the text of the note A good place to begin is to determine just how imminent is the onset of the cascade of exponentially more frequent debris-creating collisions, known as the Kessler Syndrome. 94Link to the text of the note To be certain, no one can be sure--this phenomenon being subject to highly complex probabilities. 95Link to the text of the note Indeed, experts' estimates of when such a cascade will become irreversible vary [\*316] widely. 96Link to the text of the note The National Research Council produced a report in 2011 that suggested that "space might be just 10 or 20 years away from severe problems." 97Link to the text of the note In fact, the cascading effect has already begun, albeit at a modest pace. 98Link to the text of the note However, Donald Kessler, who first described the eponymous effect in 1978, has significantly recalibrated his own outlook over the years. 99Link to the text of the note Originally, Kessler predicted that catastrophe would result by the year 2000. 100Link to the text of the note That date long passed, Kessler now speaks of a century-long process that "we have time to deal with." 101Link to the text of the note

### Multilat

#### Government sector will inevitably militarize space

**Shamas & Holden, 2019**, Victor Shamas &, Oslo Metropolitan University, Work Research Institute (AFI), Oslo, Norway; Thomas Holden, Independent scholar, Oslo, Norway, 2019, Palgrave Communications, One giant leap for capitalistkind: private enterprise in outer space, https://www.nature.com/articles/s41599-019-0218-9

On the other hand**, outer space still remains firmly within the domain of the state and is likely to do so for the foreseeable future, with the likely continued importance of military uses of satellite technology and the weaponization of Earth’s orbit**—crucially, the Outer Space Treaty only prohibits nuclear arms and other ‘weapons of mass destruction' in space, not conventional weapons, such as ballistic missiles.

#### Multilateralism can’t stop conflict

Bordachev 13 (Timofei, Doctor of Political Science, is the Director of the Center for Comprehensive International and European Studies at the Higher School of Economics, “Political Tsunami Hits Hard,” 6/30, http://eng.globalaffairs.ru/number/Political-Tsunami-Hits-Hard-16054)

The financial crisis in the United States, which in 2008 went global, and the continuing efforts by countries around the world to fight its effects have highlighted four most important tendencies in international affairs. First, pretty obvious is the conflict between the growing economic unity of the world and its worsening political fragmentation. The rise of sovereign ambitions and attempts to address all problems at the national level has come into conflict with financial and economic globalization and exacerbates crisis trends. Second, democratization in international politics and greater independence of individual states play an ever greater role. This “in-depth unfreezing” for the first time manifested itself in China’s soaring global ambitions and in the national interests and requests of other Asian countries. Turkey, a stable ally of the West in NATO and a EU aspirant waiting patiently in the antechamber, is trying on the guise of a regional power ever more often. In the meantime, the need for taking into account the ever larger range of opinions quickly erodes the international institutions that emerged in the Cold War era. This is seen not just in the sphere of security: the United Nations efficiency has largely fallen victim to the first phase of the global geopolitical catastrophe of the 1990s. Third, the growing international weight of the new countries and attempts by the old-timers, who won the Cold War, to preserve the hard-won status quo bring back the conservative interpretations of such terms as “sovereignty” and “sovereign rights.” Not only the leaders of new-comers to world politics, or the United States, traditionally concerned about its sovereignty, but quite respectable heads of European states, too, start talking about the protection of national interests. Finally, military power is ever more frequently employed by major powers as a tool to address foreign policy issues. EU countries and the United States used force and threats to use force back at the time when they were getting their hands on the assets of the former USSR. However, they were faced with a very limited set of tasks then. It never occurred to anyone in the West to say in 1999 that the purpose of NATO’s operation against Yugoslavia was to force Slobodan Milosevic to resign or, still worse, to put him to death by some untraditional way of hanging. The need for using military force with or without reason merely confirms that the international community has no other means to prevent the emergence or escalation of conflicts.

#### Multilateralism fails—*diverging interests* and a *lack of faith* guarantee cooperation is at best superficial

Heribert Dieter 14, Senior Associate at the German Institute for International and Security Affairs, Non-Resident Senior Fellow, Chongyang Institute for Financial Studies, Visiting Professor for International Political Economy at Zeppelin University, Doctorate in Political Science and Economics, Free University of Berlin, 1/31/14, The G-20 and the Dilemma of Asymmetric Sovereignty – Why Multilateralism Is Failing in Crisis Prevention, International Relations and Security Network, <http://www.isn.ethz.ch/Digital-Library/Articles/Detail/?lng=en&id=176145>

Yet, tightening the rules for financial market regulation is not the only field where the G-20 is failing. Despite the mantra-like repetition of memoranda of understanding, the trade ministers of the G-20 have not been able to overcome their conflicts of interest and reach a settlement in the Doha Round of the World Trade Organization (WTO). What are the reasons for this failure?Although the G-20 managed to prevent a revival of protectionist measures on a broad front in the midst of the crisis, there is a large gap between the announcements of the G-20 and quantifiable results in trade policy. There is not one final communiqué that lacks a clear statement stressing the importance of the WTO and the necessity to conclude the Doha Round. Nonetheless, the reality of trade policy looks very different. All the states that are preventing the conclusion of the Doha Round through their vetoes are members of the G-20.

Despite there being little public information available on the reasons for the deadlock in the Doha Round, it is known that the US, Brazil, and China are blocking its conclusion. The emerging economies Brazil and China oppose the US’s demand for the complete elimination of tariffs on industrial goods. Conversely, the US resists the request to comprehensively abandon subsidies to the agricultural sector.Thus, the Doha Round is not concluded because three important members of the G-20 no longer believe in multilateral solutions and would rather engage in preferential agreements. For experts in the field of international trade, this is a paradox. There is a broad consensus that a single rulebook for international trade would facilitate economic growth and contribute to a worldwide increase in prosperity. This, however, cannot be said for the currently popular free trade agreements. So why are the countries in the G-20 incapable of further developing the common rules for international trade? One explanation is the lack of a hegemonic power that is willing to guarantee compliance with the rules of the game, but at the same time establish a system that provides member countries with sufficient economic benefits. In any event, this is how the postwar economy emerged: The US enforced the system of Bretton Woods and made sure that the participation in this economic regime remained attractive. Of course, the Bretton Woods regime never was a truly global system, since member countries of the Council on Mutual Economic Assistance did not participate. Still, within the bipolar order of the Cold War, the US managed to keep the system open and stable.¶ After the collapse of the USSR and the following short-lived “unipolar moment” (Charles Krauthammer) of complete hegemony of the US, the multilateral order was being advanced until 1995, the founding year of the WTO. Since the turn of the millennium and the parallel emergence of a multipolar order, nearly all attempts to organize cooperation without hegemony (Bob Keohane) have failed. The present multipolar world is characterized by superficial cooperation. Global Governance, whether in policies to prevent further climate change or in economic policy, remains on hold. Even worse: The world is returning to regulation on the level of the nation-state and non-cooperation. The American political scientist Ian Bremmer refers to the resulting situation as “G-Zero,” an era in which groups such as the G-20 will no longer play a vital role. The negative perception of the international division of labor¶ Apparently, there is no such thing as an identity of interests of individual states, as assumed by the advocates of global regulation and global governance. In other words: The gap between the preferences of individual states is widening rather than narrowing. However, governments must respect the preferences of their societies in the formulation of policies if they do not wish to lose legitimacy. Then again, the different preferences of societies are the immediate result of severely diverging perceptions of the international division of labor. Even in the G-20, individual societies have very different perceptions of the effects of globalization and its economic effects.¶ In Europe and the US, many people are increasingly critical of the international division of labor, if not outright hostile to globalization. According to a number of surveys, only about one-fifth to one-third of the respondents in OECD countries see greater opportunities than risks in globalization. Even in Germany, numerous politicians and citizens have been critical of globalization, although Germany strongly benefits from open markets and the resulting intensification of international trade.¶ Without a political anchoring in the member states, the G-20 has no future¶ The unfavorable perceptions of globalization and the outlined asymmetric sovereignty have resulted in a standstill in the G