# 1AC Peninsula Round 4

## Theory

#### Interpretation: Debaters must disclose positions and round reports on the 2021-2022 NDCA LD wiki for every round they have debated this season. Round reports disclose which positions (AC, NC, K, T, Theory, etc.) were read/gone for in every speech. Positions which were read must be open-sourced

#### Violation: [screenshot]

#### Table Description automatically generated

#### Standards:

#### 1] Level Playing Field – big schools can go around and scout and collect flows but independents are left in the dark so round reports are key for us to prep- they give you an idea of overall what layers debaters like going for so you can best prepare your strategy when you hit them. Accessibility first and independent voter – it's an impact multiplier

#### 2] Strategy Education – round reports help novices understand the context in which positions are read by good debaters and help with brainstorming potential 1NCs vs affs – helps compensate for kids who can't afford coaches to prep out affs.

#### 3] Pre-round prep – 1ARs gives especially give an idea of what type of debater someone is – they could go for 1AR theory every round– otherwise I enter every round unknowing whereas you have an idea of what you want to go for from the start.

#### 4] Prep skew – You have 30 minutes to go through my aff and write a whole NC. I don’t even know what you have read at this tournament, so I can’t prep what you could go for

#### Voters:

#### 1] Fairness is a voter because debate is a competitive activity

#### 2] Education is a voter because it’s the reason schools fund debate, we wouldn’t have debate without it

#### 3] Accessibility is a voter and comes first since rejecting it is morally abhorrent and it’s a prereq to debate

#### Drop the debate: Rectify time spent on theory, Deter future abuse

#### Competing interps: Reasonability is arbitrary and invites judge intervention, Reasonability creates a race to the bottom where people try to find out how abusive they can be

#### No RVIs: Illogical – you shouldn’t win for being fair – it’s a litmus test for engaging in substance, They chill abuse checking, Incentivizes people to bait theory then win the RVI

## FW

#### The standard is maximizing expected wellbeing.

#### 1] Humans are hard-coded to follow pleasure and pain, comes before other ethics

Berridge et al 13 [Kent C Berridge, Morten L Kringelbach “*Neuroscience of affect: brain mechanisms of pleasure and displeasure*” Published: Current Opinion in Neurobiology, Vol. 23, Issue 3, June 2013] [<https://doi.org/10.1016/j.conb.2013.01.017>; Pg. 298-300] [PDF available upon request] [Berridge: James Olds Distinguished University Professor of Psychology and Neuroscience at University of Michigan. Ph.D. University of Pennsylvania] [Kringelbach: Professor of Neuroscience, Aarhus University. Senior Research Fellow, The Queen's College.] || SM

Subcortical brain machinery for actually generating or causing a ‘liking’ reaction to core pleasure can be probed more extensively via brain manipulations in animals. Studies in our laboratory have identified neural pleasure generators by focusing on the sensory pleasure of sweetness. Sweet ‘liking’ is useful because affective facial expressions of taste pleasure ‘liking’ exist in newborn humans and in some animals, aiding the objective measure of hedonic impact. For example, parents often know when their baby expresses a ‘liking’ judgment of the deliciousness of a meal. Sweet foods elicit a contented licking of the lips, but bitter tastes instead elicit disgust gapes and headshakes. Homologous ‘liking’ orofacial expressions are elicited also in apes and monkeys, and even in rats and mice [47]. We have used brain manipulations of ‘liking’ reactions to identify brain mechanisms that generate and enhance such pleasures as sweetness (Figure 3).

One surprising finding has been that neural generators of intense pleasure are much more restricted neurochemically than was previously envisioned. For instance, mesolimbic dopamine, probably the most popular brain neurotransmitter candidate for pleasure two decades ago, turns out not to cause pleasure or ‘liking’ at all. Rather dopamine more selectively mediates a motivational process of incentive salience, which is a mechanism for ‘wanting’ rewards but not for ‘liking’ them. When amplified by addictive drugs or by endogenous factors, dopamine helps generate intense levels of ‘wanting’, characteristic of drug addiction, eating disorders, and related compulsive pursuits. Why, then, are dopamine-promoting drugs such as cocaine or methamphetamine reportedly so pleasant? One possibility is that some psychostimulant euphoria comes from the ‘wanting’ component of reward: a world that seems more attractive may well carry an aura of euphoria. Another potential mechanism is that, distinct from raising dopamine in the synapse, such drugs might also induce secondary recruitment of additional neurobiological mechanisms that more directly cause hedonic pleasure. For instance, there is evidence to suggest that elevation of endogenous opioid signals may be recruited in limbic structure [62,63]. Such opioid recruitment in accumbens-pallidal hotspots described below would plausibly generate pleasure ‘liking’ [64]. Conceivably, the secondary recruitment of hedonic mechanisms might become somewhat sluggish with continual drug-taking, therefore requiring higher doses for the sought-after pleasurable high, even if dopamine-related sensitization enhanced circuit reactivity to produce more and more intense ‘wanting’ [60].

Hedonic hotspot network

Another surprising finding has been that pleasures generators are much more anatomically restricted than previously envisioned, localized to particular subregions. We have identified several pleasure generators as small hedonic hotspots, nestled in subcortical structures. Opioid and endocannabinoid neurochemical signals do more effectively generate intense pleasures than dopamine — but only within the boundaries of such hotspots. For example, mu opioid stimulation by DAMGO microinjection within a hotspot of NAc (localized in the rostrodorsal quadrant of medial shell), or in another hotspot of ventral pallidum (in the posterior half of ventral pallidum), more than doubles the intensity of ‘liking’ reactions elicited by sweetness. But the same DAMGO microinjections elsewhere in the remaining 90% of NAc outside the hotspot generate only ‘wanting’ without enhancing ‘liking’ — much like dopamine (i.e. remaining 60% of medial shell and probably entire lateral shell and core; and even regions of dorsal striatum) (Figures 1 and 3). In addition, in the anterior half of ventral pallidum, DAMGO microinjection actually causes opposite suppression of ‘liking’ reactions. So far, no hedonic hotspots have yet been found in neocortex (though the search continues), but rather only in these subcortical structures. Continued failure to find a hedonic-enhancing hotspot in prefrontal cortex would be another reason to distinguish between cortical representation and subcortical causation of pleasure as different functions.

Each accumbens-pallidum hotspot is only a cubic-millimeter in volume in rats (a human hotspot equivalent hould be approximately a cubic-centimeter, if scaled to whole-brain size). Functionally, hedonic hotspots seem quite specialized for intense pleasure generation compared to regions around them. Neurobiologically, hotspots may have unique anatomical or neurobiological features that distinguish them from the rest of their containing structure, and which perhaps permit the functional specialization for pleasure causation (Figure 1).

Integrating neurochemical and anatomical findings, what makes opioid neurotransmitters more hedonic than dopamine is not that limbic opioid signals always generate ‘liking’. In most of NAc, neither does. Rather opioid stimulation has the special capacity to enhance ‘liking’ only if the stimulation occurs within an anatomical hotspot— whereas dopamine never does anywhere. Beyond NAc and ventral pallidum, opioid stimulation in all regions tested so far for other structures, such as neostriatum, amygdala, and so on, at best generate enhancement only of motivation ‘wanting’ without enhancing hedonic ‘liking’. Overall, the pattern indicates not only strong localization of hedonic function, but also neurochemical specificity of pleasure neurotransmitters.

Functionally, hotspots in NAc and ventral pallidum interact together in a single integrated circuit. The two sites act as a functional unit for mediating pleasure enhancements. Each hotspot seems able to recruit the other to unanimously generate amplification of ‘liking’. For example, a single opioid microinjection into the NAc hotspot enhances also responsiveness of ventral pallidum hotspot neurons, reflected in neuronal firing patterns elicited by a sweet taste or in gene activation, at the same time as enhancing behavioral ‘liking’ reactions. Unanimous recruitment of both hotspots further appears to be required to magnify pleasure. Blocking either hotspot with an opioid-antagonist microinjection completely prevents opioid stimulation of the other hotspot from producing any ‘liking’ enhancement [72].Finally, the ventral pallidum hotspot may be especially important for maintaining normal levels of pleasure. Damage to ventral pallidum can cause even sweet sucrose taste to elicit purely negative gapes and other disgust reactions for days or weeks afterwards (C-Y Ho, ‘The ventral pallidum as a limbic pleasure generator, PhD Dissertation, Ann Arbor, University of Michigan, 2010) [8,73]. No other brain lesion of a single site so potently transforms sensory pleasure into purely negative affect. Of course, other brain structures do help generate intense aversive emotions when manipulated in other ways

#### 2] Life has a priori value achieved through pleasure.

Amien Kacou 8 WHY EVEN MIND? On The A Priori Value Of “Life”, Cosmos and History: The Journal of Natural and Social Philosophy, Vol 4, No 1-2 (2008) cosmosandhistory.org/index.php/journal/article/view/92/184

Furthermore, that manner of finding things good that is in pleasure can certainly not exist in any world without consciousness (i.e., without “life,” as we now understand the word)—slight analogies put aside. In fact, we can begin to develop a more sophisticated definition of the concept of “pleasure,” in the broadest possible sense of the word, as follows: it is the common psychological element in all psychological experience of goodness (be it in joy, admiration, or whatever else). In this sense, pleasure can always be pictured to “mediate” all awareness or perception or judgment of goodness: **there is pleasure in all consciousness** of things good; pleasure is the common element of all conscious satisfaction. In short, **it is simply the very experience of liking things**, or the liking of experience, in general. In this sense, pleasure is, not only uniquely characteristic of life but also, the core expression of goodness in life—the most general sign or phenomenon for favorable conscious valuation, in other words. This does not mean that “good” is absolutely synonymous with “pleasant”—what we value may well go beyond pleasure. (The fact that we value things needs not be reduced to the experience of liking things.) However, what we value beyond pleasure remains a matter of speculation or theory. Moreover, we note that a variety of things that may seem otherwise unrelated are correlated with pleasure—some more strongly than others. In other words, **there are many things the experience of which we like**. For example: the admiration of others; sex; or rock-paper-scissors. But, again, **what they are is irrelevant** in an inquiry on **a priori value**—what gives us pleasure is a matter for empirical investigation. Thus, we can see now that, in general, something primitively valuable is attainable in living—that is, pleasure itself. And it seems equally clear that we have a priori logical reason to pay attention to the world in any world where pleasure exists. Moreover, we can now also articulate a foundation for a security interest in our life: since the good of pleasure can be found in living (to the extent pleasure remains attainable),[17] and **only in living**, therefore, **a priori**, life ought to be **continuously (and indefinitely) pursued** at least for the sake of preserving the possibility of finding that good. However, this platitude about the value that can be found in life turns out to be, at this point, insufficient for our purposes. It seems to amount to very little more than recognizing that our subjective desire for life in and of itself shows that **life has some objective value**. For what difference is there between saying, “living is unique in benefiting something I value (namely, my pleasure); therefore, I should desire to go on living,” and saying, “I have a unique desire to go on living; therefore I should have a desire to go on living,” whereas the latter proposition immediately seems senseless? In other words, “life gives me pleasure,” says little more than, “I like life.” Thus, we seem to have arrived at the conclusion that the fact that we already have some (**subjective) desire for life** shows life to have some (**objective) value**. But, if that is the most we can say, then it seems our enterprise of justification was quite superficial, and the subjective/objective distinction was useless—for all we have really done is highlight the correspondence between value and desire. Perhaps, our inquiry should be a bit more complex.

#### 3] Aggregation is inevitable for governments since they have to make tradeoffs – actor specificity o/w since different agents have different obligations.

#### 4] Extinction first:

#### A] Forecloses future improvement – we can never improve society because our impact is irreversible

#### B] Turns suffering – mass death causes suffering because people can’t get access to resources and basic necessities

#### C] Moral obligation – allowing people to die is unethical and should be prevented because it creates ethics towards other people

#### D] Objectivity – body count is the most objective way to calculate impacts because comparing suffering is unethical

#### E] Moral uncertainty – if we’re unsure about which interpretation of the world is true – we ought to preserve the world to keep debating about it

## Plan

#### Mega-constellations are coming now - space companies are planning to launch thousands of satellites – even low failure rates cause massive debris fields in orbit, Mcfall-Johnsen 20

[Morgan Mcfall-Johnsen, science reporter at Insider with a Bachelor of Science in Journalism from Northwestern University, 11-3-2020, "About 1 in 40 of SpaceX's Starlink satellites may have failed. That's not too bad, but across a 42,000-spacecraft constellation it could spark a crisis.," Business Insider, [https://www.businessinsider.com/spacex-starlink-internet-satellites-percent-failure-rate-space-debris-risk-2020-10[/Kankee](https://www.businessinsider.com/spacex-starlink-internet-satellites-percent-failure-rate-space-debris-risk-2020-10%5b/Kankee) [recut Lynbrook MD]

SpaceX is launching satellites into space by the dozens to realize Starlink, a globe-encircling constellation of spacecraft that beam affordable, high-speed internet across Earth. So far, the scheme — envisioned by SpaceX founder Elon Musk in 2015 — seems to be working. The aerospace company has even opened a public beta test across the northern US and southern Canada for $99 a month, plus $499 for a startup kit. "Other countries to follow as soon as we receive regulatory approval," Musk tweeted on October 8. However, the unprecedented project has left a trail of seemingly unresponsive spacecraft in its wake. All of the satellites are designed to be maneuverable in space using an ion engine, and even deorbit themselves to burn up in Earth's atmosphere. But satellites with malfunctioning communication or propulsion systems can fly uncontrolled and pose a hazard to other satellites, and even astronauts, circling Earth. SpaceX launched its first batch of 60 prototypes in May 2019 and, to date, has flown 895 total Starlink internet satellites. But so far around 2.5% of those spacecraft may have failed, according to data collected by Jonathan McDowell, an astronomer at the Harvard-Smithsonian Center for Astrophysics. "I would say their failure rate is not egregious," McDowell told Business Insider in early October. "It's not worse than anybody else's failure rates. The concern is that even a normal failure rate in such a huge constellation is going to end up with a lot of bad space junk." Some of those failures may be intentional tests, but how many (if any) is not publicly known because SpaceX hasn't released such information. As a result, astronomers like McDowell have resorted to analyzing satellite-movement data gleaned from SpaceX and the US government, showing which Starlink satellites have fallen back toward Earth and which ones are not maneuvering. (McDowell's failure calculations do not include 45 "version 0.9" satellites that SpaceX is known to have intentionally deorbited.) Before the end of October, McDowell was measuring a 3% apparent failure rate, but a recent reanalysis indicates improvement in the newest Starlink batches. Of the last 413 "version 1.0" satellites, only one appears to have died, giving these batches a failure rate of just 0.2%. Still, McDowell notes that many of these satellites have only been in space for a few months, so more of them are likely to fail going forward. "Nevertheless it does seem that the reliability of the satellites has noticeably increased," he tweeted on October 29. SpaceX has permission from the US government to launch nearly 12,000 Starlink satellites through 2027, though it's asked to launch 30,000 more for a total of nearly 42,000. In either case, SpaceX is on track to form a "megaconstellation" that outnumbers all prior spacecraft ever launched by humanity. If 3% of the maximum planned Starlink constellation fails, that could mean 1,260 dead, 550-pound satellites the size of a desk aimlessly circling the planet. A 2.5% failure rate could mean more than 1,000 inoperative spacecraft. There were about 3,200 nonfunctional satellites in Earth's orbit as of February, according to the European Space Agency. Many of these dead spacecrafts regularly threaten to collide with others and create a space-debris crisis. In mid October, for example, satellite trackers flagged a "very high risk" close pass between a dead satellite and a discarded rocket body, with one company calculating a 10% chance of collision. (Fortunately, they didn't.) SpaceX says its satellites will naturally deorbit, or burn up in Earth's atmosphere, if their propulsion systems don't work. But that process can take up to five years, according to Starlink's website. In the meantime, defunct satellites rocket around Earth faster than a bullet, with nobody to steer them away from other spacecraft that may fly in their path. SpaceX did not acknowledge Business Insider's requests for comment. However, in filings to the Federal Communications Commission, SpaceX has downplayed the risk, stating that it "views satellite failure to deorbit rates of 10 or 5 percent as unacceptable, and even a rate of 1 percent is unlikely." If 1% of its satellites did fail with no capacity to maneuver, the company said, "there is approximately a 1 percent chance per decade that any failed SpaceX satellite would collide with a piece of tracked debris." The company also claimed that its practices "effectively eliminate the chance that such rates will ever occur." Dead satellites can collide and build up a space-debris crisis SpaceX is not alone in pushing to launch large numbers of internet satellites. OneWeb, which the UK government recently purchased out of bankruptcy, has already launched 74 satellites for its proposed constellation of 48,000, while Amazon aims to launch more than 3,200 for its Kuiper fleet. It's unclear how many dead satellites those constellations might also leave in orbit. Since nobody can maneuver them, failed satellites sometimes hurtle toward other spacecraft — including the International Space Station and its crew of astronauts. Even if a satellite crashes into another satellite with no humans on board, it can create perilous conditions. "We replace two satellites with essentially two shotgun blasts of debris," Dan Ceperley, the CEO of satellite-tracking company LeoLabs, told Business Insider in January. That month, two dead satellites almost crossed paths and exploded into hundreds of thousands of bits of debris. It wouldn't have been the first such explosion, and it doesn't take many to exacerbate the debris problem. In 2007, China tested an anti-satellite missile by obliterating one of its own weather satellites. Two years later, one American and one Russian spacecraft accidentally collided. Those two events alone increased the amount of large debris in low-Earth orbit by about 70%. India conducted its own anti-satellite missile test in 2019, and the explosion created an estimated 6,500 pieces of debris larger than an eraser. All in all, more than 500 such "fragmentation events" have created nearly 130 million bits of debris in Earth's orbit. Those chunks of debris zip around the planet at more than 17,500 mph, or roughly 10 times the speed of a bullet. That's not only a problem for robotic spacecraft, but ones carrying people. Just last month, a piece of debris careened within a mile of the football field-sized space laboratory. To avoid a collision, mission controllers fired the thrusters of an attached Russian cargo spaceship to maneuver the station out of possible harm's way. The three crew members sealed themselves inside an ISS segment with a Soyuz spaceship, so they could escape if the debris struck. If the space-junk problem gets extreme, a chain of collisions could spiral out of control and surround Earth in a practically impassable field of debris. This possibility is known as the Kessler syndrome, after Donald J. Kessler, who worked for NASA's Johnson Space Center and calculated in a 1978 paper that it could take hundreds or even thousands of years for such debris to clear up enough to make spaceflight safe again. "It is a long-term effect that takes place over decades and centuries," Ted Muelhaupt, who leads The Aerospace Corporation's satellite system analysis, previously told Business Insider. "Anything that makes a lot of debris is going to increase that risk." The sheer number of objects in Earth's orbit may already be having a Kessler-like effect, as Rocket Lab CEO Peter Beck described last week."This has a massive impact on the launch side," he told CNN Business, adding that rockets "have to try and weave their way up in between these [satellite] constellations." Starlink is already a space-debris hazard SpaceX has barely launched 2% of its planned constellation, but it has already had a close call. In September 2019, the European Space Agency had to maneuver one of its spacecraft at the last minute to avoid possibly colliding with a Starlink satellite. The chance of that crash was 1 in 1,000. While that may sound low, NASA routinely moves the ISS for chances of 1 in 100,000. The ESA said it had to move its satellite because SpaceX had "no plan to take action." SpaceX said it missed the ESA emails about the issue due to a "bug" in its communications systems. Overall, close approaches like that seem to be happening more frequently. "We are seeing recently a decided uptick in the number of conjunctions," Dan Oltrogge, an astrodynamicist at Analytical Graphics, Inc, where he uses a software that has been assessing conjunction data since 2005, told Business Insider. "And it looks to be very well aligned with the new large-constellation spacecraft that have been launched." As new satellite constellations launch, regulatory agencies like the FCC may need to evaluate how many dead spacecraft they're willing to accept. "What is an acceptable failure rate?" McDowell said. "That, I'm maybe not competent to have an opinion on."

#### High probability for collisions, Murtaza et al 20

[Abid Murtaza, educator at the School of Electronic and Information Engineering at Beihang University pursuing a Ph.D. in space technology applications with Beihang University, Syed Jahanzeb Hussain Pirzada, educator at the School of Cyber Science and Technology at Beihang University pursuing a Ph.D. in space technology applications with Beihang University, Tongge Xu, Associate Professor with the School of Cyber Science and Technology at Beihang University, and Liu Jianwei, educator at the School of Electronic and Information Engineering at Beihang University, 03-09-2020, “Orbital Debris Threat for Space Sustainability and Way Forward (Review Article),” IEEE, [https://ieeexplore.ieee.org/abstract/document/9028136]/Kankee](https://ieeexplore.ieee.org/abstract/document/9028136%5d/Kankee) [recut Lynbrook MD]

Despite the potential as mentioned above, the big question on their impact on the space debris environment has also become the most critical concern for every space concern entity. Concerning the space debris collision threat, SpaceX and OneWeb have both selected an altitude (above 1100 km) that is less densely populated. Additionally, both have told the FCC that their constellation will comply with international mitigation standards, such as reentry to earth Earth’s atmosphere being accomplished within approximately one year after completion of their mission. Additionally, OneWeb’s Orbital Debris Mitigation Plan reports that the probability of a OneWeb satellite becoming disabled as a result of collisions with small debris is 0.003, while SpaceX stated that “there is approximately 1% chance per decade that, any failed SpaceX satellite would collide with a piece of tracked debris” [97]. Apart from the claims of SpaceX and OneWeb, some studies have been performed to understand the effect of these constellations on the space environment and the reliability and collision possibilities of the mega constellation with this populated debris environment [10], [98], [99]. A study shows that there is substantial uncertainty in the prediction of the reliability of mega constellation satellites, with considerable risk to the space environment. This is because much of the information about mega constellation satellites, including the detailed designs, is not available [10]. Another recent study shows that a high probability exists for the occurrence of at least one catastrophiccollision, i.e., 5% for OneWeb and 45.8% for SpaceX constellations, during an operational phase of 5 years [97]. The study [98] showed that it was estimated that an impact of approximately 3 cm in diameter would lead to a catastrophic collision of a OneWeb sized satellite, while the proposed size of a SpaceX constellation satellite is larger than a OneWeb satellite. The study also shows that the satellites in the constellation would have a 35% probability of fragmenting during the described mission lifecycle catastrophically. Thus, what we can confidently say is that despite the claims of mega constellation proposers, there are serious concerns, doubts, and uncertainty about the interaction of debris and satellites in mega constellations that exist. NASA has recently completed a parametric study to understand how significantly proposed large satellite constellation can contribute to the existing orbital debris problem. The objective was to quantify the potential negative debris-generation effects from mega constellation to the LEO environment and provide recommendations for mitigation measures [99]. The results show that for the 25-year decay rule at the end of their missions, with a 90% reliability of post-mission disposal, the additional debris population increase with respect to that without these big constellations is approximately 290% in 200 years. Even with 95% post-mission disposal reliability for the mega constellation spacecraft, the additional population increase is still close to 100% as shown in Fig. 12. While with 99% post-mission disposal, the additional population increase is reduced to 22%. The cumulative numbers of catastrophic collisions are shown in Fig. 13, which shows that in 90% scenario a non-linear increase from 27 to a total of 260 catastrophic collisions in 200 years. In 95% scenario, the total number of catastrophic collisions is 90 in 200 years. Based on results from this study NASA recommended that 99% spacecraft PMD reliability is needed to mitigate the serious long-term debris generation potential from mega constellation similar in scope to the study scenarios. Besides this, there are many aspects which are nevertheless not under the control of anyone, such as a collision of two large retired satellites or rocket bodies. Additionally, there could be many hypothetical scenarios that could lead to a catastrophic collision. For example, the accuracy error in tracking the debris data thorough SSN, the human or technical errors in estimated the timing of the collision threats, failure in a collision avoidance maneuver by satellites due to onboard control problems or anomalies in the propulsion system, and any deliberate political reasons and so on. Additionally, so far there is no legal restriction of using ASAT. So, what if the use of ASAT continues in future just like India did recently? Also what if the war between two advanced nations extends from ground to space that could result in the use of ASAT weapons to destroy the satellites of enemies? Thus, the argument is that there could be any reason for a catastrophic collision, and one or more such accident could make the situation worse, which would have severe consequences for everyone especially such as Kessler syndrome. Hence, we can say that mega constellation projects, despite their potential benefits are not going to help in improving debris and space environment in any way; instead, fair chances of worsening of debris and space environment can be envisioned from the above discussion. It might be negligence if we deliberately continue to underestimate debris challenge and its potential threat to the space environment in the future. SECTION VII.Legal and Regulatory Issues

#### Private actors are uniquely key to avoid debris cascades – they have lower safety standards and won’t cooperate with others, Yuan 21

[Alda Yuan, Public Health Analyst U.S. Department of Health and Human Services and visiting attorney at the Enivornmental Law Institute with a JD from Yale, 2021, “FILLING THE VACUUM: ADAPTING INTERNATIONAL SPACE LAW TO MEET THE PRESSURES CREATED BY PRIVATE SPACE ENTERPRISES,” Hein Online, [https://heinonline.org/HOL/P?h=hein.journals/denilp49&i=27]/Kankee](https://heinonline.org/HOL/P?h=hein.journals/denilp49&i=27%5d/Kankee) [recut Lynbrook MD]

C. Non-state Actors Introduce Practical Challenges that Endanger the Future of Space Travel If companies are permitted to access space without a proper legal framework or sufficient coordination, the practical risks may doom the project of humanity in outer space for the near future. The opening anecdote dramatized the risks, but the fact that a chain of cascading destruction might preclude the use of whole bands of outer space or make launches impossible is not farfetched. 99 Indeed, it is already happening.0 Because space missions always create debris and there is a correlation between the number of objects orbiting earth and the chances of collision, which thereby creates more debris, even no further activity in space will eventually result in a belt of debris encircling the earth.10 1 This cascade effect, called the Kessler Syndrome, 102 has the potential to speed up astronomically if activities in outer space expand without contingent regulation and mitigation measures.1 1 3 At current rates and in the absence of a catastrophic event, lower earth orbit, in particular, might reach a tipping point within the next ten to fifty years.1 4 If the space debris problem is permitted to reach this tipping point, access to space may well be cut off for the near future because it will be impossible to launch satellites.1 5 Given that we do not have the technology to clean up debris yet, space travel faces an existential threat. In light of this, most space-faring states cooperate, working together to develop guidelines and pool resources to track the debris already orbiting the earth to minimize the chances of a collision.106 Given the high speeds the debris travels at, approximately 10 km/second,107 and the amount of damage even tiny pieces can do, 108 the existing tracking systems are not an absolute fix. At these speeds, a piece of debris weighing a mere two grams can produce an impact force equivalent to a kilogram of TNT.109 More than three hundred thousand pieces of debris greater than one cm in diameter," and therefore capable of causing enormous damage, orbit the earth while the US Space Surveillance Network (SSN) system can only track objects over five cm in diameter." There are millions of fragments smaller than one cm, which are impossible to track and yet can still cause significant damage.11 2 Still, the tracking system is important. In the last twenty years, the International Space Station has carried out several avoidance maneuvers to avoid potential collision with pieces of space debris being tracked by the SSN system.113 Between April of 2011 and April of 2012, the ISS performed four evasive maneuvers." 4 On two additional occasions, the crew fell back to the Soyuz since there was no time to set up an evasive maneuver." 5 This sort of cooperation works given the limited number of actors involved and the aligned interests of the nation-state parties. Commercial space companies do not have the same incentives to cooperate to share data and new technologies. This is why many have called for the creation of a new convention on managing orbital debris. 16 However, escalation of the Kessler Syndrome is not the only problem that might arise by failing to accommodate for the rise of the commercial corporations, so such a convention would not eliminate the threat. For instance, many satellites use nuclear power sources (NPS), which can break up upon reentry." As early as 1978, the Cosmos-954 incident scattered radioactive debris over Canada.118 Other accidents of this type could raise fallout concerns, especially if they occur over more densely populated regions. In an attempt to alleviate this risk and decrease the chances of collisions, various nations have cooperated to design and standardize methods of decommissioning satellites. 119 One strategy is to supply spacecraft with additional fuel and nudge it out of orbit so it will burn up in the atmosphere over the ocean. 120 Another is to push the ailing satellite into a graveyard orbit. 121 These methods require additional research and design and incur additional costs. 12 2 Private companies may not spontaneously take the steps necessary to comport with the common practices of space-faring nations. Thus, the rise of private corporations, while opening up new possibilities, may also threaten space travel itself and the international legal order in which coordination currently occurs. The coordination necessary to prevent and manage the unique problems that arise in space requires a more pragmatic framework. Directly binding private non-state actors benefits the international community because it prevents abusive practices and permits the coordination of efforts that make space safer. However, it will also benefit the private sector by providing companies with a background legal structure, neutral dispute resolution, and common guidelines to even the playing field. More importantly, if companies not subject to regulation and oversight are permitted to operate in outer space, disasters cannot be effectively prevented. In that case, space exploration and the benefits stemming from it might be closed off for all. III. SPACE IS A GLOBAL COMMONS UNDER CUSTOMARY INTERNATIONAL LAW

#### 3 impacts:

#### More space debris means we trap ourselves on Earth, Weiner 17

(Sophie Weiner, I’m a writer, journalist and occasional DJ living in Brooklyn, NY. I enjoy writing about the internet, technology, science, politics, art, and how they intersect. , 2017, accessed on 1-13-2022, Popular Mechanics, "If We Don't Act Soon, Space Junk Might Trap Us On Earth", https://www.popularmechanics.com/space/a26885/space-junk-cleanup/) [Lynbrook MD]

The tiny pieces of junk orbiting the Earth could have a major impact on space exploration. Not everything we send into space comes back down. In fact, there are millions of pieces of junk, ranging from tiny flecks of paint to entire satellites currently taking up space around the Earth's atmosphere. As of now, space agencies are already tracking 750,000 pieces of space debris orbiting the Earth. This space pollution is a major problem--because of how fast objects orbiting Earth travel, even a paint fleck a few millimeters long can cause serious damage when it hits something. The more that this space junk proliferates, the harder and harder it will be to send anything up into space. We could literally trap ourselves on Earth if we're not careful. Luckily, scientists are working on ways to prevent this. One NASA program called Space Debris Elimination proposes shooting atmospheric gasses into space to destabilize the debris' orbit and send it plummeting back to Earth, where it will burn up in our atmosphere. Another proposal from the ESA tackles the larger pieces of debris, like old satellites. Their idea is to send a machine into space called the E-DeOrbit, which would literally shoot a net at old satellites and drag them back into the atmosphere with a small rocket. Neither of these solutions would address the millions of tiny bits of trash floating around the Earth, so the best idea for now is to prevent more from building up. If not, we could find ourselves trapped in a prison of our own making.

#### Satellite crashes cause a laundry list of problems, Haroun et al 21

[Fawaz Haroun, Law @ University of Lagos, Shalom Ajibade, Law @ University of Lagos, Philip Oladimeji, Law @ University of Lagos, John Igbozurike, Law @ University of Lagos, “Toward the Sustainability of Outer Space: Addressing the Sustainability of Space Debris,” New Space, <https://www.liebertpub.com/doi/pdf/10.1089/space.2020.0047>] /Triumph Debate [recut Lynbrook MD]

Debris pose risks to both Earth and space. With respect to access to space and space resources, debris endangers both current and prospective space missions. NASA notes that most space debris can reach speeds \*8,046.72 meter per second (almost 7 times faster than a bullet), fast enough for a relatively small piece of orbital debris to inflict severe damages on a spacecraft or satellite.3 Majority of the world’s population rely on satellite technologies and applications every day.11 Indeed, satellites have many essential uses, including communications, photograph and mapping, remote sensing and Geographic Information System (essential to geographical studies), weather forecast, global positioning system, and the defense industry.12 When pieces of space debris increase, they pose a great threat not only to the orbital paths of these satellites, but also to their operational span, due to possible collisions.11 In the same vein, debris also affect safety of humans in space. The prospects of more human presence in orbit are becoming more realistic every day. Organizations are planning space missions for tourism. For example, both SpaceX and Virgin Galactic intend to begin private passengers’ flights to space in early 2020s decade.13 Moreover, current manned missions such as the International Space Station (ISS) are always considered to be at risk of debris situations. Unsurprisingly, NASA records that the ISS has made 3 collision avoidance maneuvers in 2020 alone.14 Asides the effects of debris in space, there is also direct danger to Earth. Large items from space can re-enter Earth successfully without totally burning up in the atmosphere, and this can result in nuclear contamination of Earth’s surface.15 This danger was made apparent when a Soviet satellite fell to Earth in 1978, scattering radioactive particles over northern Canada; this crash required extensive cleanup of the area.16 There are other instances of debris falling onto Earth. On April 27, 2000, 3 different places in South Africa experienced space debris crashes.17 Similarly, on May 13, 2020, a Chinese rocket falling back to Earth uncontrollably may have dropped debris in 2 nearby Ivorian villages.18 These events force us to consider where the next debris drop will be, perhaps somebody’s roof, or in a field of playing kids. There is no doubt that something needs to be done in light of the aforementioned risks.

#### Satellites are key to environmental monitoring – debris collapses it and causes climate extinction, Biggs 18

(Ben Biggs 18, PhD Researcher in Computer Vision and Deep Learning at the University of Cambridge, “How Satellites Can Protect Planet Earth From Disaster”, HowItWorks Daily, 12/22/2018, https://www.howitworksdaily.com/how-satellites-can-protect-planet-earth-from-disaster/)

It might not look it, but our planet is a fragile place. A delicate balance of pressure, temperature and gases keeps us alive, as our atmosphere lets in enough heat for us to thrive – but not too much that we get too toasty. For many years our planet has looked after itself with ease. Now, with humans on the scene, things are changing more than ever, from climate changetomass deforestation. If our planet is going to survive long into the future it’s going to need our help. Fortunately, we’ve got plenty of missions that are working for the benefit of our world already. Using observation satellites in orbit, scientists have been monitoring Earth for decades, watching how the planet pulsates and changes over time. From orbit we can watch how species migrate, identify and predict environmental changes and even fix problems. A great example of this was the global effort to repair a hole in the ozone above the Antarctic back in 1987. Two years prior, scientists had discovered that chemicals known as chlorofluorocarbons (CFCs) – produced by fridges and aerosols, among other things – were causing the hole to grow. As a result countries around the world agreed to phase out the use of CFC as part of the Montreal Protocol. In early 2018, NASA announced that its Aura satellite had watched the hole successfully close, with it expected to fully repair as early as 2060. It was proof that we could work together to change the planet for the better. Aura is part of a broader NASA project called the Earth Observing System (EOS). This programme, which began in 1997, has seen NASA launch missions and instruments into orbit. This has included the groundbreaking Landsat series of satellites, which have provided surface images of the whole globe. Then there’s the Terra mission that launched in 2009 and studies clouds, sea ice and more from orbit. Most of these satellites are in polar orbits, which means they orbit the planet from top to bottom so that it rotates underneath and gives them a global view. Planning for the EOS began back in the 1980s, with NASA keen to regularly fly instruments for at least 15 years. “Human activity has altered the condition of the Earth by reconfiguring the landscape, by changing the composition of the global atmosphere, and by stressing the biosphere in countless ways,” they noted in a handbook in 1993. “There are strong indications that natural change is being accelerated by human intervention.” More than two dozen missions have been launched as part of the EOS to date. Among the programme’s many accomplishments, scientists watched as an ice shelf collapsed on the Antarctic Peninsula in 2002 using the Terra satellite. The same satellite, along with the Aqua satellite launched in 2002, has provided a global view of how the vegetation cycle changes over the course of a year and the effect the climate has on it. Those same two satellites have also allowed us to see how summer sea ice in the Arctic is decreasing, which means that more of the Sun’s light is being absorbed rather than being reflected, raising global temperatures. The EOS has helped in other ways too, such as enabling scientists to keep a close eye on the levels of toxic gases like carbon monoxide being emitted from massive fires in the atmosphere. This allows people on the ground to be alerted to these dangers, and they can in turn be advised to limit their outdoor activity to protect their health. The EOS is even helping to track and monitor rare animals, such as chameleons in Madagascar. Here, scientists have been able to use satellite imagery, combined with known habitats of the animals, to map out where they are likely to be living. It would take survey teams on the ground thousands of years to replicate this information without satellites. It’s not just NASA that has been keeping a close eye on the planet. The European Space Agency (ESA) runs the Copernicus project, billed as the world’s largest single Earth observation campaign. Previously known as the Global Monitoring for Environment and Security (GMES) programme, it began with the launch of the Sentinel-1A satellite in April 2014. This radar imaging satellite provides images both day and night and during all weather conditions, and these are being used to map sea ice, track oil spills and more. This has been followed by half a dozen more missions, with the latest – Sentinel-3B – launching on 25 April 2018. This mission is focusing on monitoring the behaviour and health of the oceans, but it has a wide range of abilities. It flies in formation with its predecessor, Sentinel-3A, and together the two of them can provide global data for Earth across an entire day. The satellitescan measure the temperature over oceans, as well as the colour and height of the sea. They can also monitor wildfires from space, check the health of vegetation and map the way that land is being used around the world. And there are more Sentinel satellites on the way. In the coming years we’ll see the Sentinel-4 and Sentinel-5 missions launch, studying the composition of our planet’s atmosphere, while Sentinel-6 will measure global sea surface height for ocean and climate studies. “Copernicus will help shape the future of our planet for the benefit of all,” said the ESA, also noting that it isthe “most ambitious Earth observation programme to date,” one that will provide accurate and timely data on the environment, climate change and more. All of this data is vital for directing climate policy and other human activities on Earth. By observing our planet around the clock from space we can see the direct effect that humans are having on it. These are not the only climate-monitoring missions run by NASA and the ESA. The former has a number of other missions, including the Deep Space Climate Observatory, which observes the sunlit side of Earth. The latter has eight missions on the books in its Earth Explorer programme, including a mission to study how Earth’s gravity field varies over the surface of the planet, called the Gravity field and steady-state Ocean Circulation Explorer (GOCE), which ended in 2013. In 2016, countries of the world came together to sign the Paris Climate Agreement, a global effort to reduce carbon emissions to prevent the global average temperature rising by two degrees Celsius above pre-industrial levels. While the US later infamously reneged from this agreement, it was proof that with enough level-headed minds, minds that can see the data from missions showing how the planet is changing, we can take action. Humans continue to have a major effect on the planet, for better or worse, and monitoring that change is vital to our planet’s survival.

## Underview

#### [1] Theory:

#### [a] 1AR theory is DTD because 4 minutes is too short to call out an abusive NC and go for substance – 1AR time skew proves that affirming is already harder

#### [b] No neg RVIs because they can collapse to a 6 minute voter in the 2NR which aff can’t do

#### [c] Neg can only get DTA on bidirectional shells since the aff speaks in the dark in the 1AC, violating countless unpredictable interps

#### [d] All theory spikes violations are DTD, prevents moot of the 1AC offense and helps account for 1ar time skew

#### [e] No new 2n responses to u/v, destroys AC theory leverage and skews aff strategy, they have cross to know implications of my underview.

#### [f] And I get 1ary theory or the neg can be infinitely abusive in the 1nc