# 1AC

### 1AC – Framing

#### *Ethics must begin a priori*

#### A] Principle of Diego affirms

**Wikiwand**. “Principle of Explosion.” Wikiwand, 0AD, [www.wikiwand.com/en/Principle\_of\_explosion](http://www.wikiwand.com/en/Principle_of_explosion). //Massa

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The principle of explosion (Latin: ex falso (sequitur) quodlibet (EFQ), "from falsehood, anything (follows)", or ex contradictione (sequitur) quodlibet (ECQ), **"from contradiction, anything (follows)"), or the principle of**[**Pseudo-Scotus**](https://www.wikiwand.com/en/Pseudo-Scotus), is the law of [classical logic](https://www.wikiwand.com/en/Classical_logic), [intuitionistic logic](https://www.wikiwand.com/en/Intuitionistic_logic) and similar logical systems, according to which any statement can be proven from a contradiction.[[1]](https://www.wikiwand.com/en/Principle_of_explosion#citenote1) That is, once a contradiction has been asserted, any proposition (including their negations) can be inferred from it. This is known as **deductive explosion**.[[2]](https://www.wikiwand.com/en/Principle_of_explosion#citenote2)[[3]](https://www.wikiwand.com/en/Principle_of_explosion#citenote3) The proof of this principle was first given by 12th century French philosopher [William of Soissons](https://www.wikiwand.com/en/William_of_Soissons).[[4]](https://www.wikiwand.com/en/Principle_of_explosion#citenote4)

As a demonstration of the principle, **consider two contradictory statements – "All lemons are yellow" and "Not all lemons are yellow"**, and suppose that both are true. If that is the case, **anything can be proven**, e.g., **the assertion that "unicorns exist", by using the following argument:**

1. We know that **"All lemons are yellow"**, as it **has been assumed to be true.**
2. **Therefore**, the two-part statement **"All lemons are yellow OR unicorns exist” must also be true**, since the first part is true.
3. However, **since we know that "Not all lemons are yellow"** (as this has been assumed), **the first part is false, and hence the second part must be true, i.e., unicorns exist.**

B] Arcos Logic – **If the aff is winning, vote aff – rules of logic says that answering the antecedent means the consequent is true**

**Stanford** “an introduction to PHILOSOPHY Stanford University” <https://web.stanford.edu/~bobonich/dictionary/dictionary.html> SJCP//JG

Conditional statement: an “if p, then q” compound statement (ex. If I throw this ball into the air, it will come down); p is called the antecedent, and q is the consequent.  A conditional asserts that if its antecedent is true, its consequent is also true; any conditional with a true antecedent and a false consequent must be false.  For any other combination of true and false antecedents and consequents, the conditional statement is true.

#### C] Negating affirms because it assumes that the 1ac is a statement that is worthy of contestation which means are arguments are legitimate.

#### D] GCD – I am the greatest conceivable debater so vote for me because I am infinitely good. To prove this, I will make them contest the aff and say they are not under my control.

#### E] Representations of space – we can only access our experiences if we can interpret the space around us, but that requires the a priori. Thinking of the absence of space is impossible – we can think of empty space but never the lack of space itself. Imagining space through a priori thoughts is the only way we can even begin to have a conception of interpreting experience; we need to be able to construct space through our minds.

#### F] Diego Authority – The meta-ethic is bindingness. Practical reason is the only unescapable authority because to ask why I should be a reasoner concedes it’s authority since you’re actively reasoning.

#### G] Diego fallacy – experience only tells us what is since we can only perceive what is, not what ought to be. But it’s impossible to derive an ought from descriptive premises, so there needs to be additional a priori premises to make a moral theory.

#### That justifies universality –a priori principles like reason apply to everyone since they are independent of human experience and – any non-universalizable norm justifies someone’s ability to impede on your ends i.e. if I want to eat ice cream, I must recognize that others may affect my pursuit of that end.

#### Additionally:

#### Resource disparities—focusing on evidence privileges debaters with the most prep excluding lone-wolfs. A debater under my framework can easily be won without any prep since minimal evidence is required. That pre-req to accessing the activity.

#### Thus, the standard is consistency with the categorical imperative.

#### 1] Consequences Fail: a] Yes act/omission distinction – there are infinite events occurring over which you have no control, so you can never be moral b] Every action has infinite stemming consequences so we can’t predict. c] Induction is circular because it assumes nature will hold uniform d] aggregation impossible – impossible to measure pain and pleasure e] Every action is infinitely divisible, only intents unify

#### 2] Contesting offense under the Aff framework is a voting issue. Reciprocity – I have to win my framework and beat the NC before I can access case, whereas you can collapse to either layer or dump on offense for 7 minutes as a no-risk issue so there’s a skew. Key to fairness because it’s definitionally equal access to the ballot.

#### No RVI on 1ac theory that has a pre-emptive violation--they would have 7 minutes to answer a minute-long shell and the debate would end – entire aff can’t be shell since you can just meet

#### Fairness outweighs: 1] testing – if we can’t answer their arguments we don’t know if they’re right 2] minority debaters will just quit if the activity is unfair which supercharges abuse

#### 1AC Theory is DTD—its key to making sure they’re held accountable since they chose to violate it

#### Competing interps on 1AC Theory- 7 minutes is more than enough time to robustly justify their counter interp

### Advocacy

#### Thus, the negative and I affirm – Resolved: The appropriation of outer space by private entities is unjust.

**Resolve (v.) is defined as,** settle or **find a solution to** (**a** problem, dispute, or **contentious matter**) **so the past tense, resolved, grammatically means the resolution has been resolved so you affirm since the resolution has been proven true from its original form.**

#### Revising the Outer Space Treaty clarifies legal loopholes and ambiguities in space debris.

* Private entities: Non-governmental
* Space debris: Non-functional Space Objects

Shah 20. Sachin Shah is a write for Cornell Undergraduate Law and Society Review. 8/30/20 [CORNELL UNDERGRADUATE LAW & SOCIETY REVIEW “The International Legal Regulation of Space Debris,” <https://www.culsr.org/articles/the-international-legal-regulation-of-space-debris>] Justin

While many scholars agree that the Outer Space Treaty provides rudimentary regulation of the problem of space debris, therein lies the problem: it is only rudimentary. One of the most often cited problems with the Outer Space Treaty is that it was signed in 1967 (53 years ago) and that the technological climate of the space travel industry was not as advanced as it is today, reflected in a marked lack of specificity in the writing of these laws. [7] This lack of specificity highlights another issue: the imprecise language of the Treaty leaves unclear the definition of space debris, which leaves the regulation open to interpretation. Rather than agree with most scholars that space debris constitute “space objects,” scholar Chelsea Muñoz-Patchen uses the UN Space Debris Mitigation Guidelines’ definition of space debris along with the fact that space debris is non-functional and its ownership often untraceable in order to argue that space debris should be classified as “abandoned property” instead. [8] Furthermore, non-governmental private enterprises may be inclined to legally define space debris as something other than “space objects” in order to avoid the Outer Space Treaty’s aforementioned financial penalties, as will be explained below. The Outer Space Treaty also does not account for the fact that the space debris problem, especially as of late, has been becoming worse over time. As collisions between debris and satellites continue to occur, more debris is strewn across Earth’s orbit, endangering future spacecraft from safely orbiting Earth, supporting the theory of the Kessler Syndrome. [9] Thus, the Outer Space Treaty is not a very effective legal instrument with regards to mitigating the amount of space debris in orbit around Earth.

Due to the Treaty’s weakness, many of the aforementioned scholars support revising the Outer Space Treaty by clearly defining space debris, increasing its technology-specific language to combat space debris issues, and outlining specific punishments to negate the complete lack of enforcement built into the current Treaty. While nations do recognize the danger that space debris pose to orbital operations, stronger laws must be enacted in order to de-escalate an imminent arms race and incentivize them to mitigate their debris. [10] Believing that one convention or treaty would be insufficient, N. Jasentuliyana recommends the creation of a regulatory regime to solve the growing problem of space debris. Such a regime would “effectively deal with these technical problems and establish international legal rules, standards and procedures on a continuing basis.” [11] Thus, one potential solution to the legal lack of space debris mitigation is establishing a lawmaking agency which specifically focuses on the issue of space debris. In addition to the creation of a legal agency which could hold actors accountable for the amount of space debris produced, international laws guiding the actions of private companies’ activities may also provide an answer, as will be discussed in greater detail below.

Although there do exist international laws and regulations governing the use of space for states and governmental entities (albeit weak ones), the private enterprises sending objects into space are subject to even less stringent regulations than states are. SpaceX, for example, to authorize their sending of 42,000 Starlink satellites into orbit, only had to submit paperwork to the U.S. Federal Communications Commission (FCC) and the International Telecommunication Union (ITU). [12] Paul Larsen posits that, in the face of less stringent regulations, nongovernmental satellite companies send many satellites into orbit in order to maximize their profit, which is their primary objective. Unlike the vagueness and lack of enforcement that came with written law (which is apparent in the Outer Space Treaty), the unwritten market-oriented incentives for profit by large-scale satellite providers and operators provide a reason for actors to mitigate space debris in orbit around Earth. Larsen states that “They have huge sums of money invested in each satellite, perhaps as much as a half-billion dollars, when all costs are included. Loss of one satellite is a major event. They want their assets to be safe.” [13] Thus, these satellite companies have a major stake in space traffic management and their market incentives do a better job of mitigating space debris than the existing legal regulation does. The company SpaceX, as mentioned above, plans to send 42,000 satellites into space. While doing so would likely result in significant profits for the company, many believe this will diminish astronomical visibility as well as increase the chance of collisions with space debris. [14] Due to these effects, scientists and space law experts alike have called for a legal delay to the ITU’s decision on whether or not to accept SpaceX’s proposal to launch more satellites. If these parties are successful, a precedent-setting legal case regarding space debris mitigation and satellite use in space may well provide a solution to the outdated Outer Space Treaty of 1967.

#### We’re defining debris as appropriation – any other interpretation collapses aff ground.

Johnson 20 – Christopher, 2020, Space Law Advisor of Secure World Foundation, [“The Legal Status of MegaLEO Constellations and Concerns About Appropriation of Large Swaths of Earth Orbit,” <https://ui.adsabs.harvard.edu/abs/2020hss..book.1337J/abstract>] Justin

Long-Term Occupation Constitutes Appropriation These altitudes are additionally significant, as nonfunctional spacecraft in orbits lower than around 500 km will re-enter the Earth’s atmosphere in months or a few years, but the altitudes selected for the Starlink constellation, while technologically desirable for their purposes, also mean that any spacecraft which are not de-orbited from these regions may be there for decades, or possibly even hundreds of years. By comparison, the granting of rights for orbital slots at GSO is in 15-year increments, a length of time much less than what the altitudes of the megaconstellations threaten. Such long spans of time at these altitudes by these megaconstellations further bolster the contention that this occupation rises to the level of appropriation of these orbits. Prevents Others from Using Space Article I of the Outer Space Treaty establishes that the exploration and use of outer space is “the province of all mankind.” It further requires that this exploration and use shall be by all States “without discrimination of any kind, on a basis of equality and in accordance with international law...” However, when one private corporation so overwhelmingly possesses entire portions of outer space, their use is discriminatory to other potential users and interferes with their freedom to access, explore, and use outer space. So long as these actors are so dominantly possessing and occupying those orbits, their actions exclude others from using them. What other operator would dare use orbits where there are already hundreds of satellites operating as part of a constellation? It would be an extremely unwise and risky decision to try to share these orbits with a mega constellation, so they will likely choose other altitudes and orbits. This massive occupation of particular orbits effectively defeats others from enjoying the use of outer space. While a State can issue permits for one of its corporations allowing them to launch and operate satellites to this extent, that does not automatically mean that their activities in outer space, an area beyond national sovereignty, are therefore in perfect accordance with the strictures of international law. Indeed, national permissions offer no such guarantee. No Due Regard for Others That these megaconstellations violate the prohibition on appropriation in Article II is additionally supported by Article IX of the Outer Space Treaty. Article IX requires that in the exploration and use of outer space, States “shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space... with due regard to the corresponding interests of other States...” There is hardly any way to view this deployment of megaconstellations as showing any type of due regard to the corresponding interests of others. This lack of regard further supports the notion of their unilateral transgressive violations of the purposes of space law norms. Harmful Contamination The impacts of the spacecraft on the pressing issue of space debris need not be gone into detail here. Suffice it to say, megaconstellations threaten mega-debris. The failure rate of these comparatively cheap satellites should give pause, because if 5% of a constellation of 100 satellites fails, this is 5 guaranteed new pieces of debris intentionally introduced to the fragile space domain. Article IX of the Outer Space Treaty warns of harmful contamination of the space environment and requires States to take appropriate measures to prevent this harmful contamination. A responsible government could not, in all seriousness, permit the intentional release of such amounts of space debris, especially in the already fraught orbits that many megaconstellations are headed towards. While the threat of space debris is not directly relevant to the accusation of appropriation of outer space, it goes towards the argument that these actors are conducting activities in a manner lacking in regard to others, and in fact, amounts to excluding others from using the space domain. By excluding others, this has the effect of taking orbits for themselves, which IS occupation. If This Isn’t Appropriation, Then What Is? Arguing in the alternative, if these megaconstellations — in their dominant occupation of entire orbits in orbital planes with numerous satellites — could be considered (merely for the sake of argument) to not be appropriation, we must therefore ask: what would be appropriation? What use of void space, including orbits of the Earth, would constitute actual appropriation? What further, additional fact of these uses of space, if added to the scenario, would cause that constellation to cross over the line into clearly prohibited appropriation? Perhaps the exact same scenario, but supplemented with an actual, formal claim of sovereignty, issued by a government, is the only element which could be added to megaconstellations which would then cross the threshold into appropriation. However, a formal claim of sovereignty would be merely an act occurring on Earth and would not change any actual facts in the space domain. Consequently, the lack of a formal claim of sovereignty should not be the deciding criteria in arriving at the conclusion that megaconstellations constitute appropriation of orbits.

### Offense

#### In outer space, there is no governing authority and thus claiming property imposes your will over others.

Stilz 2 (Anna Stilz, Anna Stilz is Laurance S. Rockefeller Professor of Politics and the University Center for Human Values. Her research focuses on questions of political membership, authority and political obligation, nationalism and self-determination, rights to land and territory, and collective agency. , 2009, accessed on 12-18-2021, Muse.jhu, "Project MUSE - Liberal Loyalty", https://muse.jhu.edu/book/30179)//phs st

It might seem, then, that Kant, like Simmons, would hold that although our acquired rights are initially indefinite, our private acts of appropria- tion in a state of nature can function to more clearly delimit their contours. Once I appropriate an external object—for example, my piece of land in the state of nature—the boundaries of my right to external freedom might simply be equivalent to those of the things and spaces that I have appropriated. If this were so, then individuals could succeed in more precisely defining property without the help of the state, and simply by coordinating expectations based on their private acts. In order to respect and acknowledge my external freedom, on this view, you would just have to cede me the spot I have rightfully occupied and to refrain from infringing on my choices within that sphere. Yet Kant does not take this position: he argues that the rights made possible by the postulate of practical reason are problematic. Whatever rights our private acts of appropriation outside the state confer upon us can only be understood as provisional rights, that is, they are not conclusive and settled (peremp- torische): indeed, for him, “It is possible to have something external as one’s own only in a rightful condition, giving laws publicly, that is, a civil condition” (MM, 6:255). What is the problem with these private methods of defining our rights to property? Why are they so unsatisfactory, from Kant’s perspective? The essential problem with acquiring property rights in a state of nature, for Kant, seems to be that we cannot unilaterally—through private will— impose a new obligation on other persons to respect our property that they would not otherwise have had.30 “By my unilateral choice I cannot bind another to refrain from using a thing, an obligation he would not otherwise have; hence I can do this only through the united choice of all who possess it in common” (MM, 6:261).31 Even claiming to interpret the a priori general will on another person’s behalf, says Kant, is at- tempting to impose a law on them on my own private authority, since every act of appropriation is “the giving of a law that holds for everyone” (MM, 6:253).32 And he worries that this claim to private authority over others is a potential source of injustice: “Now when someone makes ar- rangements about another, it is always possible for him to do the other wrong; but he can never do wrong in what he decides upon with regard to himself (for volenti non fit inuria)” (MM, 6:314). My will to appro- priate, in the belief that my appropriation is justifiable to others, cannot yet serve as a (coercive) law for everyone else, because it cannot put them under an obligation. Kant suggests, in other words, that figuring out how to carve up shares of the external world consistently with everyone’s freedom does not ex- haust the entire problem of justice involved in acquiring rights to prop- erty. We might appeal to criteria of salience or convention to help coordi- nate our expectations on which of the many possible property distributions to choose. But we face an additional difficulty: how do we impose one of these distributions without at the same time arrogating to ourselves the private authority to lay down the law for an equally free being, one who has an innate right not to be constrained by our private will? In coercing someone to respect our view of our property rights, we are also necessarily claiming the right to impose our private will upon that person. If it is to really respect everyone’s freedom, Kant thinks, a property distribution cannot be unilaterally imposed in this way. This additional dimension of the problem of justly acquiring rights— the problem of unilateral imposition—is rooted in each person’s basic “right to do what seems right and good to him and not to be dependent upon another’s opinion about this” (MM, 6:312). This right to do what seems right and good to him derives from the moral equality of persons: no one has an innate right to decide in another person’s behalf. And be- cause each person is an equally authoritative judge, it is therefore impossi- ble—in a state of nature—to put [them] under an obligation of justice that [they] himself does not recognize. The will of all others except for himself, which proposes to put him under obligation to give up a certain possession, is merely unilateral, and hence has as little lawful force in denying him possession as he has in asserting it (since this can be found only in a general will). (MM, 6:257) In conditions of equal authority—such as those that exist in any state of nature—one is obligated only by what one recognizes, by one’s own lights, as an objectively valid requirement of justice. For that reason, no other person’s merely unilateral will can bind one in the face of one’s own disagreement. Kant concludes from this that “no particular will can be legislative for the commonwealth” (TP, 8:295), since no private person’s will can effec- tively claim to impose an obligation on others. Instead, Kant says that “all right,” that is to say all claims that impose binding duties on others, “depends on laws” (TP, 8:294). Law overcomes the problem of unilater- alism inherent in imposing new obligations on others on one’s own au- thority, by substituting an omnilateral will in place of a unilateral one: “Only the concurring and united will of all, insofar as each decides the same thing for all, and all for each, and so only the general united will of the people, can be legislative” (MM, 6:314). But why is law—imposed from a public perspective—consistent with everyone’s freedom in a way that particular wills—based on our private judgments—are not? Fundamentally, Kant argues that defining and enforcing both our rights over our bodies and our rights to external objects through public and nonarbitrary laws is the only way to secure ourselves against the coercive interference of other private persons in our affairs. For Kant, then, the only sort of property distribution to which we could all hypothetically consent must necessarily be one that is defined and enforced by the state, since all privately enforced distributions have the inevitable side-effect of subjecting us to the wills of others. To show this in more detail, Kant points out two different ways that unilateral private enforcement under- mines our right to independence: first, through unilateral interpretation— a particularly pervasive problem in the enforcement of property rights, since these rights are fully conventional in a way our rights over our bod- ies are not; and second, through unilateral coercion, which threatens in- terference by others in all our rights, both our rights over our bodies and our rights over external things.

#### Comes first – everyone has equal authority over justice – impossible to determine who to prioritize, so property right claims are impossible to dispute absent the state – takes out NC offense because they assume we can claim property.

### 1AC – Underview

#### 1] The role of the ballot is to determine whether the resolution is a true or false statement

#### Aff flex – other frameworks moots the entire aff and exacerbates the fact that the 1nc is reactionary since I should be able to compensate by choosing Collapses – you must say it is true that a world is better than another in order to compare the two.

#### Scalar methods rely on intervention – the persuasion of certain DA or advantages sway decisions – only a binary resolves that and prevents intervention which is the biggest impact under fairness.

#### The ballot says vote aff or neg based on a topic – five dictionaries[[1]](#footnote-1) define to negate as to deny the truth of and affirm[[2]](#footnote-2) as to prove true which means it’s constitutive and jurisdictional – that outweighs – all your arguments presume the judge evaluates them and controls the IL to topic ed and fairness since the rules of the activity is what we base our arguments on.

#### Spec arguments are infinitely regressive since they are arbitrary conditions that will change every round – makes it impossible to norm which is the terminal impact of theory

#### Logical arguments aren’t justified in a vacuum – they’re in the context of the resolution so we only defend the resolutional application – misapplications are infinitely regressive since every argument can be used to justify something bad so you should frame this debate through specificity

#### 2] 1AR theory is legit – anything else means infinite abuse – drop the debater, competing interps, no rvis– 1AR is too short to make up for the time trade-off – no RVIs or 2NR theory and paradigm issues– 6 min 2NR means they can brute force me every time. Aff theory first – it’s a much larger strategic loss because 1min is ¼ of the 1AR vs 1/7 of the 1NC which means there’s more abuse if I’m devoting a larger fraction of time.

#### 3] “c’mon”

deBoer 16 [Fredrik deBoer 16, Limited-Term Lecturer, Introductory Composition at Purdue Program, 3/15/16, “c’mon, guys,” http://fredrikdeboer.com/2016/03/15/cmon-guys/]

I could be wrong about the short-term dangers, and the stakes are incredibly high. But in the end we’re left with the same old question: what tactics will actually work to secure a better world?

In a sharp, sober piece about the meaning of left-wing political violence in the 1970s, Tim Barker writes “If you can’t acknowledge radical violence, radicals are reduced to mere victims of repression, rather than political actors who made definite tactical choices under given political circumstances.” The problem, as Barker goes on to imply, is those tactical choices: in today’s America they will essentially never break on the side of armed opposition against the state. The government knows everything about you, I’m sorry to say, your movements and your associations and the books you read and the things you buy and what you’re saying to the people you communicate with. That’s simply on the level of information, before we even get to the state’s incredible capacity to inflict violence. Look, the world has changed. The relative military capacity of regular people compared to establishment governments has changed, especially in fully developed, technology-enabled countries like the United States. The Czar had his armies, yes, but the Czar’s armies depended on manpower above and beyond everything else. The fighting was still mostly different groups of people with rifles shooting at each other. If tomorrow you could rally as many people as the Bolsheviks had at their revolutionary peak, you’re still left in a world of F-15s, drones, and cluster bombs. And that’s to say nothing of the fact that establishment governments in the developed world can rely on the numbing agents of capitalist luxuries and the American dream to damper revolutionary enthusiasm even among the many millions who have been marginalized and impoverished. This just isn’t 1950s Cuba, guys. It’s just not. In a very real way, modern technology effectively lowers the odds of armed political revolution in a country like the United States to zero, and so much the worse for us. This isn’t fatalism. It doesn’t mean there’s no hope. It means that there is little alternative to organization, to changing minds through committed political action and using the available nonviolent means to create change: a concert of grassroots organizing, labor tactics, and partisan politics. Those things aren’t exactly likely to work, either, but they’re a hell of a lot more plausible than us dweebs taking the Pentagon. Bernie Sanders isn’t really a socialist, but he’s a social democrat that moves the conversation to the left, and if people are dedicated and committed to organizing, the local, state, and national candidates he inspires will move it further to the left still. You got any better suggestions? Listen, commie nerds. My people. I love you guys. I really do. And I want to build a better world. Not incrementally, either, but with the kind of sweeping and transformative change that is required to fix a world of such deep injustice. But seriously: none of us are ever going to take to the barricades. And it’s a good thing, too, because we’d probably find a way to shoot in the wrong direction. I can’t dribble a basketball without falling down. American socialism is largely made up of bookish dreamers. I love those people but they’re not for fighting. And even if you have a particular talent for combat, you’re looking at fighting the combined forces of Google, Goldman Sachs, and the defense industry. Violence is hard. Soldiering is hard. In an era of the NSA and military robots, it’s really, really hard. “Should we condone revolutionary violence?” is dorm room, pass-the-bong conversation fodder, of precisely the moral and intellectual weight of “should we torture a guy if we know there’s a bomb and we know he knows where it is and we know we can stop it if we do?” It’s built on absurd hypotheticals, propped up by the power of anxious machismo, and undertaken to no practical political end. It’s understandable. I get it, I really do. But it’s got nothing to do with us. The only way forward is the grubby, unsexy work of building coalitions and asking people to climb on board.

#### 5] Violation’s pre-emptive – you didn’t disclose 2 rounds too

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#### 6] Presumption and permissibility affirm

#### A] We always default to assuming something true until proven false ie if I told you my name is Jet you would believe me

#### B] Unjust[[3]](#footnote-3) is “not morally right; not fair” and permissibility disproves the positive obligation which is aff ground

#### C] Freeze- otherwise we would not be able to justify morally neutral actions since there isn’t a prohibition and we would have to prove an obligation.

### 1AC – Adv – Debris

#### The space sector is trending towards privatization – that drives feedback loops of technology creating cascading collisions.

BERNAT 20. Pawel @ Military University of Aviation. 11/4/20. [SAFETY ENGINEERING OF ANTHROPOGENIC OBJECTS, “ORBITAL SATELLITE CONSTELLATIONS AND THE GROWING THREAT OF KESSLER SYNDROME IN THE LOWER EARTH ORBIT,” Volume 4, PDF] Justin

The second decade of the 21st century has brought a dynamic and somewhat surprising development of the space industry. Since 1972 – the Apollo 17 crew mission to the Moon, the humankind has not left the safe environment of Earth’s orbit, and for years the global space sector has been progressing in slow but steady pace run by a few largest space agencies like American NASA, European ESA, Japanese JAXA, and Chinese CNSA. The most significant achievement of the “old ways” of managing outer space exploration is the International Space Stations (ISS) that has facilitated more than 20 years of continuous crewed operations.

The situation started to change at the turn of the century when new generations of private entrepreneurs began to invest in and develop space technologies like rocket boosters, spaceships, and what most important for the subject of the paper – satellites and their constellations. This new shift is known among the space industry as “Space 2.0”, and its emergence is dated around 2000-2002 when the companies like SpaceX, Blue Origin, and Virgin Galactic were established. (Pyle, 2019). The real change, however, came in 2012 when the first SpaceX commercial mission was successfully launched to the ISS (NASA, 2012).

Since then, the participation of the private sector in the space industry has skyrocketed, especially in the United States. Today, SpaceX is the only entity that provides reusable rockets (first stage and fairings) that is capable of vertical launch and landing. Their current flagship rocket – Falcon 9 has carried out 23 successful missions in 2020 (SpaceX, 2020) and another four are planned for December of that year (Weitering, 2020). Moreover, thanks to Crew Dragon spaceship developed by the company, Americans have regained this year the capacity of sending astronauts from their own soil after nine years of buying the seats on Russian Soyuz capsule. SpaceX is now in the process of building a communication satellites constellation that will be addressed and analyzed in the paper.

Nowadays, in the space industry, we witness a very productive cybernetic feedback look between the development of space technologies, the democratization of those technologies, and a substantial reduction of prices. The latter is even more significant if we compare the cost of launching cargo into orbit now and 20 years ago – Falcon 9 is over ten times cheaper than Space Shuttle (Jones, 2018). This, of course, directly translates into the mass and number of objects that we are able to put in the orbit viably. Once the constellations consisting of thousands of satellites were unthinkable, but in the current environment, they become a reality.

Space 2.0 also has brought new threats and challenges in the sphere of national and international security. The increase in launch capacity, among other factors, has led to progressive militarization and weaponization of space and new arms race (Bernat, 2019), which has also contributed to the growing numbers of orbiting objects.

The goal of the paper is to present the argumentation that the threat posed by the cascading collisions in the Earth’s orbit (Kessler syndrome) is becoming more severe due to the construction of orbital satellite constellations; the threat that presents a real danger for people during their EVAs and orbital infrastructure, which may bare immediate consequences for safety and security systems on Earth. In order to provide the theoretical context for the above claim, the following issues will be presented and discussed: (1) space debris, (2) the Kessler syndrome, (3) orbital debris models, (4) the legal issues related to space debris and mitigation actions against their proliferation, and (5) the planned and being currently developed orbital satellite constellations and how they contribute to the growing threat of the Kessler syndrome.

#### Privatization exponentially increases debris – lack of regulations spikes it – models.

BERNAT 20. Pawel @ Military University of Aviation. 11/4/20. [SAFETY ENGINEERING OF ANTHROPOGENIC OBJECTS, “ORBITAL SATELLITE CONSTELLATIONS AND THE GROWING THREAT OF KESSLER SYNDROME IN THE LOWER EARTH ORBIT,” Volume 4, PDF] Justin

5. Orbital satellite constellations and the growing threat of the Kessler syndrome

Space 2.0 – the new era of space exploration that we witness now in the 21st century means, in words of Buzz Aldrin, “moving human enterprise into space” (Pyle, 2019, p. xiv). The process of commercialization of outer space has already begun and is not limited to private companies providing technologies and services for national or international space agencies, as it was in the past. On the contrary, private companies from the space sector have now matured to carry out their own independent projects.

As for 2020, SpaceX is a company that serves as the best example – it launches satellites to the orbit, both for state and private contractors, it successfully realized two crew missions to the International Space Station, and is in the process of constructing Starlink satellite constellation that will provide high-speed internet access across the planet.

Each satellite weighs around 260 kg, is equipped with an ion propulsion system, autonomous collision avoidance system, and orbits Earth at approximately 540-560 km altitude (Starlink, 2020). At the beginning of November 2020, more than 860 Starlink satellites were orbiting the Earth (Jewett, 2020). Immediate plans include launching 12,000 satellites, but they assume a potential later extension to 42,000 (Henry, 2019a). Of course, SpaceX has employed, at least declaratively, all necessary measures to keep the space clean – the satellites are equipped with the deorbiting system, and in the event of inoperability of the propulsion system (Starlink, 2020). The orbital collisions are, however, inevitable. As it was shown before, the possibility of collisions grows with the number of orbital objects. Bastida Virgili with the team compared (2016, p. 154-155) orbital debris environment development without and with a large hypothetical constellation consisting of merely 1080 satellites, distributed across 20 orbital planes at 1,100 km altitude (Fig. 5).

Chart, line chart

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Figure 5. Comparison of long term evolution of the number of objects in LEO with and without the constellation (Virgili et al., 2016, p. 155)

It has to be noted that although SpaceX’s Starlink is the only constellation that is being built in orbit, it is not the only one planned. There are at least a few initiatives aiming at the same goal – to construct internet infrastructure at the Earth’s orbit. The planned Kuiper Systems LLC, which is a subsidiary of Amazon and intends to place 3,236 broadband satellites in the LEO, is one of Starlink’s biggest competitors (Henry, 2019b). Now, there is even a rivalry between the two companies because Kuiper’s lowest orbital shell is planned to be 590 km, with a tolerance of 9 km either above or below (Cao, 2020), which is the altitude of Starlink satellites. Moreover, the race for space in orbit is now at the beginning.

The outer space is vast. It increasingly becomes more cluttered with both operational satellites and space debris. The threat of collisions increases and no institution or body has enough power to license, coordinate and regulate what is sent to the orbit. The UNOOSA has not such power. National states decide what the companies from the space industry can launch to space. In the United States, which is most advanced in the area of private constellations, it is the Federal Aviation Administration (FAA) that issues the appropriate approvals. The race to put broadband internet satellites bears similarities to the gold rush – there are no rules, at the global level, apart from first-come, first-served.

#### Rivalrous orbits create space conflict and turn good satellites.

Samson 22 – Victoria Samson is the Washington office director for the Secure World Foundation, an organization that focuses on space sustainability, and she has over 20 years of experience in military space and security issues. Previously, Ms. Samson was a senior analyst for the Center for Defense Information. She also was a senior policy associate at the Coalition to Reduce Nuclear Dangers, a consortium of arms control groups. Earlier, she was a researcher at Riverside Research Institute, where she worked on war-gaming scenarios for the Missile Defense Agency. 1/17/22. [Bulletin of the Atomic Scientists, “The complicating role of the private sector in space,” DOI: 10.1080/00963402.2021.2014229] Justin

At this exact moment, we are seeing the increasing dominance of commercial actors in space – specifically the rise of mega-constellations, or large numbers of small satellites flying in formation to provide global coverage for a variety of governmental and commercial uses, including both communications and Earth observation. Consequently, the fundamental nature of space is changing, to one of a domain dominated by commercial actors. This change will have major consequences for international stability, both in terms of how it demonstrates that the old governance structure for space is being left behind – and how it highlights Russia’s declining rank in global space powers. Certain orbits may be effectively taken over by a handful of entities, and there will be competition for useful portions of the electromagnetic spectrum. With eyes on the sky everywhere, there will be little or no room for state secrets – for better or worse. This is happening at the same time that Russia’s space identity is floundering, which may further upset the stability of the domain of space.

As of November 2021, there are roughly 4,800 active satellites in orbit around Earth, around 1,850 of which belong to just one entity: SpaceX’s Starlink mega-constellation (Thompson 2021). This change has happened very quickly, as Starlink satellites just began to be launched in May 2019 (O’Callaghan 2019). This is only the first wave of the megaconstellations as well. While it is hard to say exactly how many satellites will be launched as part of this new use of space, there are requests or plans for mega-constellations that could mean well over 100,000 new satellites could potentially be in low Earth orbit. While not all of these satellites will be launched, even a small fraction of that proposed number will fundamentally shift the situation so that the major actors in space will no longer be nation-states (as has been the case to date) but the private sector, changing the timbre of the space domain.

This leads to challenges in discussing space security issues: Space is a shared, international domain; if we cannot include all the stakeholders in the discussions, we will not come to complete solutions to the problems. But first, some background.

A little history

The commercial sector is not new to space. Commercial entities have been active in space for decades now; in fact, it was a dispute over what should be the extent of their role in space that shaped part of the 1967 Outer Space Treaty. Article VI of that treaty notes:

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities . . .. The activities of nongovernmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. (Outer Space Treaty 1967)

This was a compromise between the United States and the USSR, in which the latter argued that there was no such thing as commercial space. Having language requiring state actors to carry out “authorization and continuing supervision” gave the United States the flexibility it wanted to develop a commercial space sector while ensuring that there would still be national oversight.

A lack of coordination

One way in which the rise of these mega-constellations may complicate international security in space is through concerns about these satellites hampering access to certain orbits. While slots in geosynchronous Earth orbit are set by the International Telecommunication Union, there is no international entity coordinating orbital slots at low Earth orbit. This means that, given the potentially tens of thousands of satellites that could be launched given company plans, certain orbits could be de facto ceded to a handful of entities – in defiance of Article II of the Outer Space Treaty, which says that space “is not subject to national appropriation.” Consequently, this could lead to strife or competition over certain orbits.

It is possible that, given the number of satellites that companies are asking the United States’ Federal Communications Commission for broadcasting rights to, certain orbits may reach their carrying capacities – meaning that they are at the maximum number of satellites that can be operated, as defined by physical and radiofrequency interference aspects. This could lead to disputes over which country has the right to use certain orbits,

#### No limited nuclear wars – extinction.

Webber 19 – Dr Philip Webber has written widely on nuclear issues and is Chair of Scientists for Global Responsibility (SGR) – a membership organisation promoting responsible science and technology. We will all end up killing each other and one nuclear blast could do it. 5/18/19. [METRO.UK “We will all end up killing each other and one nuclear blast could do it,” <https://metro.co.uk/2019/05/18/we-will-all-end-up-killing-each-other-and-one-nuclear-blast-could-do-it-9370115/>] Recut Justin

The nuclear armed nations have inadvertently created a global Doomsday machine, built with 15,000 nuclear weapons.

Most (93%) have been built by Russia and in the US, 3,100 of them are ready to fire within hours.

Pre-programmed targets include main cities as well as a range of military and civilian targets across the world primarily in the UK, Europe, US, Russia and China but also in Japan, Australia and South America.

One nuclear blast, one mistake, one cyber attack could trigger it.

But first a reminder about the incredible destructive power of a nuclear weapon. Modern nuclear warheads are typically 20 times larger than either of the two bombs that obliterated Hiroshima and Nagasaki at the end of the Second World War. What just one nuclear warhead can do is unimaginable. We’ve drawn some of the key features to scale against cityscapes in the UK for a Russian SS-18 RS 20V (NATO designation ‘Satan’) 500kT warhead. US submarines deploy a similar weapon – the Trident II Mk5, 475kT warhead. A deafening, terrifying noise will be created, like an intense thunder that lasts for 10 seconds or longer.

After a blinding flash of light bright destroying the retina of anyone looking, and a violent electromagnetic pulse (EMP) knocking out electrical equipment several miles away, a bomb of this size quickly forms an incandescent fireball 850 metres across.

This is about the same height as the world’s tallest building, the Burj Khalifa. Drawn against the London Canary Wharf financial district or the Manchester skyline, the huge fireball dwarfs one Canary Sq. (240m), the South Tower Deansgate (201m) and the Beetham Tower Hilton, (170m). The fireball engulfs both city centres completely, melting glass and steel and forms an intensely radioactive 60m deep crater zone of molten earth and debris. A devastating supersonic blast wave flattens everything within a radius of two to three km, the entire Manchester centre, an area larger than the City of London, with lighter damage out to eight km. Most people in these areas would be killed or very seriously injured.

The fireball quickly rises forming an enormous characteristic mushroom shaped cloud raining highly radioactive particles (fallout). It rises to 60,000 ft (18,000m) – twice the altitude of Everest – and is 15 miles, 24km across.

This is one warhead. There are 10 such warheads on each of Russia’s 46 missiles (460 in total) and 48 on each of eight US Trident submarines (384 in total). In reality, in a nuclear conflict all of these warheads and a further 956 ready-to-fire are likely to be launched.

Whilst this scale of destruction is horrific and hundreds of millions of people would be killed in a few hours from a combination of blast, radiation and huge fires, there are also terrible longer-term effects.

Scientists predict that huge city-wide firestorms combined with very the high-altitude debris clouds would severely reduce sunlight levels and disrupt the world’s climate

1. <http://dictionary.reference.com/browse/negate>, <http://www.merriam-webster.com/dictionary/negate>, <http://www.thefreedictionary.com/negate>, <http://www.vocabulary.com/dictionary/negate>, <http://www.oxforddictionaries.com/definition/english/negate> [↑](#footnote-ref-1)
2. *Dictionary.com – maintain as true, Merriam Webster – to say that something is true, Vocabulary.com – to affirm something is to confirm that it is true, Oxford dictionaries – accept the validity of, Thefreedictionary – assert to be true* [↑](#footnote-ref-2)
3. https://dictionary.cambridge.org/us/dictionary/english/unjust

   [↑](#footnote-ref-3)