# 1AC

### 1AC – Framing

#### *Ethics must begin a priori*

#### [A] Empirical Uncertainty – evil demon could deceive us and inability to know others experience make empiricism an unreliable basis for universal ethics. Outweighs since it would be escapable since people could say they don’t experience the same.

#### [B] Constitutive 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.

#### Normativity outweighs: a] Obligations – lack of it doesn’t generate stable ethics so it permits anything except the one thing it condemns b] Collapses – injustices need universal ideal principles to ground them and explain why they are wrong which otherwise justifies skep since no external reason to follow ethics c] Necessity – every arg presupposes ability to set and pursue ends which collapses to my framework d] Is/Ought Gap – description of injustices only tells us what exists, not how to properly fix it or act with it which leaves all harms unresolved.

#### That justifies universality – a] a priori principles like reason apply to everyone since they are independent of human experience and b] 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:

#### [A] Only universalizable reason can effectively explain the perspectives of agents – that’s the best method for combatting oppression.

Farr 02 Arnold Farr (prof of phil @ UKentucky, focusing on German idealism, philosophy of race, postmodernism, psychoanalysis, and liberation philosophy). “Can a Philosophy of Race Afford to Abandon the Kantian Categorical Imperative?” JOURNAL of SOCIAL PHILOSOPHY, Vol. 33 No. 1, Spring 2002, 17–32.

**One** of the most popular **criticism**s **of Kant’s moral philosophy is that it is too formalistic.**13 That is, the universal nature of the categorical imperative leaves it devoid of content. Such a principle is useless since moral decisions are made by concrete individuals in a concrete, historical, and social situation. This type of criticism lies behind Lewis Gordon’s rejection of any attempt to ground an antiracist position on Kantian principles. The rejection of universal principles for the sake of emphasizing the historical embeddedness of the human agent is widespread in recent philosophy and social theory. I will argue here on Kantian grounds that **although a distinction between the universal and the concrete is** a **valid** distinction, **the unity of the two is required for** an understanding of human **agency.** The attack on Kantian formalism began with Hegel’s criticism of the Kantian philosophy.14 The list of contemporary theorists who follow Hegel’s line of criticism is far too long to deal with in the scope of this paper. Although these theorists may approach the problem of Kantian formalism from a variety of angles, the spirit of their criticism is basically the same: The universality of the categorical imperative is an abstraction from one’s empirical conditions. **Kant is** often **accused of making the moral agent an abstract, empty**, noumenal **subject. Nothing could be further from the truth. The Kantian subject is** an embodied, empirical, concrete subject. However, this concrete subject has a dual nature. Kant claims in the Critique of Pure Reason as well as in the Grounding that human beings have an intelligible and empirical character.15 It is impossible to understand and do justice to Kant’s moral theory without taking seriously the relation between these two characters. The very concept of morality is impossible without the tension between the two. By “empirical character” Kant simply means that we have a sensual nature. We are physical creatures with physical drives or desires. **The** very **fact that I cannot simply satisfy my desires without considering the rightness** or wrongness **of my actions suggests that my empirical character must be held in check** by something, or else I behave like a Freudian id. My empiri- cal character must be held in check **by my intelligible character**, which is the legislative activity of practical reason. It is through our intelligible character that **we formulate principles that keep our** empirical **impulses in check.** The categorical imperative is the supreme principle of morality that is constructed by the moral agent in his/her moment of self-transcendence. What I have called self-transcendence may be best explained in the following passage by Onora O’Neill: In restricting our maxims to those that meet the test of the categorical imperative we refuse to base our lives on maxims that necessarily make our own case an exception. The reason why a universilizability criterion is morally signiﬁcant is that it makes our own case no special exception (G, IV, 404). In accepting the Categorical Imperative we accept the moral reality of other selves, and hence the possibility (not, note, the reality) of a moral community. **The Formula of Universal Law enjoins no more than that we act only on maxims that are open to others also.**16 O’Neill’s description of the universalizability criterion includes the notion of self-transcendence that I am working to explicate here to the extent that like self-transcendence, universalizable moral principles require that the individ- ual think beyond his or her own particular desires. The individual is not allowed to exclude others **as** rational **moral agents** who have the right to act as he acts in a given situation. For example, if I decide to use another person merely as a means for my own end I must recognize the other person’s right to do the same to me. I cannot consistently will that I use another as a means only and will that I not be used in the same manner by another. **Hence,** the **universalizability** criterion **is a principle of consistency and** a principle of **inclusion.** That is, in choosing my maxims **I** attempt to **include the perspective of other moral agents.**

#### [B] Ethical frameworks are topicality interpretations of the word unjust so they must be theoretically justified. Prefer on resource disparities—focusing on evidence and statistics privileges debaters with the most preround prep excluding lone-wolfs who lack huge evidence files. A debater under my framework can easily be won without any prep since minimal evidence is required. That controls the internal link to other voters because a pre-req to debating is access to the activity.

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

#### [1] Presumption and Permissibility affirm: 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[[1]](#footnote-1) 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.

#### [2] Consequences Fail: a] Every action has infinite stemming consequences, because every consequence can cause another consequence so we can’t predict.

#### b] Induction is circular because it relies on the assumption that nature will hold uniform and we could only reach that conclusion through inductive reasoning based on observation of past events.

#### c] Every action is infinitely divisible, only intents unify because we commit the end point of an action – but consequences cannot determine what step of action is moral

#### d] aggregation impossible – impossible to measure pain and pleasure

#### e] Every action is infinitely divisible, only intents unify

### Offense

#### Plan – The appropriation of outer space through the production of orbital debris by private entities is unjust.

#### Orbital debris is

NASA.gov 21 [NASA – 5/26/21. “Space Debris and Human Spacecraft.” <https://www.nasa.gov/mission_pages/station/news/orbital_debris.html>] Justin

Orbital Debris

Space debris encompasses both natural meteoroid and artificial (human-made) orbital debris. Meteoroids are in orbit about the sun, while most artificial debris is in orbit about the Earth (hence the term “orbital” debris).

Orbital debris is any human-made object in orbit about the Earth that no longer serves a useful function. Such debris includes nonfunctional spacecraft, abandoned launch vehicle stages, mission-related debris, and fragmentation debris.

#### The aff interprets enforcement as an OUF (Orbital Use Fee). Proportionality in relation to the space industry solves best without harming it and any other solution only worsens the threat – models.

Rao et al 20. Akhil, Matthew Burgess, and Daniel Kaffine \*Department of Economics, Middlebury College, Middlebury \*\*Cooperative Institute for Research in Environmental Sciences, University of Colorado, Environmental Studies Program, and Department of Economics \*\*\*Department of Economics. 2020 [PNAS, “Orbital-use fees could more than quadruple the value of the space industry,” <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7293599/>] Justin

The space industry’s rapid recent growth represents the latest tragedy of the commons. Satellites launched into orbit contribute to—and risk damage from—a growing buildup of space debris and other satellites. Collision risk from this orbital congestion is costly to satellite operators. Technological and managerial solutions—such as active debris removal or end-of-life satellite deorbit guidelines—are currently being explored by regulatory authorities. However, none of these approaches address the underlying incentive problem: satellite operators do not account for costs they impose on each other via collision risk. Here, we show that an internationally harmonized orbital-use fee can correct these incentives and substantially increase the value of the space industry. We construct and analyze a coupled physical–economic model of commercial launches and debris accumulation in low-Earth orbit. Similar to carbon taxes, our model projects an optimal fee that rises at a rate of 14% per year, equal to roughly $235,000 per satellite-year in 2040. The long-run value of the satellite industry would more than quadruple by 2040—increasing from around $600 billion under business as usual to around $3 trillion. In contrast, we project that purely technological solutions are unlikely to fully address the problem of orbital congestion. Indeed, we find debris removal sometimes worsens economic damages from congestion by increasing launch incentives. In other sectors, addressing the tragedy of the commons has often been a game of catch-up with substantial social costs. The infant space industry can avert these costs before they escalate.

In 2017, 466 new satellites were launched—more than double the previous year’s launches and more than 20% of all active satellites in orbit in 2017 (1, 2). Rapid space industry growth is projected to continue, driven largely by commercial satellites (Fig. 1). This growth is driving buildup of debris in low-Earth orbit, currently including over 15,000 objects (3). Collision risk from debris is costly; collisions damage or destroy expensive capital assets that are difficult or impossible to repair. Debris buildup could eventually make some low-Earth orbits economically unviable and other orbits difficult or impossible to access (4). In the worst case—although uncertain and occurring over long time sshorizons—debris growth could become self-sustaining due to collisions between debris objects, a tipping point called Kessler Syndrome (4, 5).

Proposed solutions have so far largely been technological and managerial, aimed at mapping, avoiding, and removing debris (6, 7). These include end-of-life deorbit guidelines and “keep out” zones for active satellites and nets, harpoons, and lasers to deorbit debris (6). However, with open access to orbits, reducing debris and collision risk incentivizes additional satellite launches, which eventually restore the debris and risk. For instance, if firms were willing to tolerate a 0.1% annual risk of satellite loss before a technological improvement in debris removal, they will be willing to launch more satellites until the 0.1% annual risk of satellite loss was restored.

Thus, the core of the space debris problem is incentives, not technology. Since satellite operators are unable to secure exclusive property rights to their orbital paths or recover collision-related costs imposed by others, prospective operators face a choice between launching profitable satellites, thereby imposing current and future collision risk on others, or not launching and leaving those profits to competitors. This is a classic tragedy of the commons problem (1, 3, 8, 9). It can be economically efficiently addressed via incentive-based solutions, such as fees or tradable permits per year in orbit, analogous to carbon taxes or cap and trade (8, 10–12). Incentives should target objects in orbit—rather than launches—because orbiting objects are what directly imposes collision risk on other satellites (13). We quantify the economic benefits of implementing such incentives to correct the underlying open-access problem.

We use a coupled physical–economic model combining rich physical dynamics with satellite economics to quantify the benefits of an internationally harmonized “orbital-use fee” (OUF) relative to a business as usual (BAU) open-access scenario and relative to a scenario with active debris removal. An OUF is a type of Pigouvian tax—a well-known economic instrument for addressing externality problems (14). Our model accounts for the effects of each scenario on satellite launch decisions (Materials and Methods and SI Appendix). While we focus on an OUF for analytical convenience, it is conceptually equivalent to other mechanisms for pricing orbits, such as tradable permits.

Our physical model of satellite and debris evolution in orbit obeys relevant accounting identities and utilizes reduced form approximations of physical processes validated in other works (15, 16). We fit and calibrate the model using data on collision risk and orbital debris from the European Space Agency (ESA) (17) and data on active satellites from the Union of Concerned Scientists (UCS) (2) (Materials and Methods and SI Appendix). The ESA dataset covers 1958 to 2017, and the UCS dataset covers 1957 to 2017. Our physical model assumes runaway debris growth (Kessler Syndrome) cannot occur, which likely leads our model to understate the benefits of OUFs (Materials and Methods). Our economic model assumes that satellites are launched and operated to maximize per satellite private profits, net of any fees, subject to collision risk. We calibrate the model by fitting the BAU scenario (no fees or debris removal) to historical industry data and launch trends (1, 2) (Materials and Methods and SI Appendix).

We project future launch rates to 2040 under the BAU scenario using our fitted model and published projections of future growth of the space economy (18). The projections in ref. 18 were developed by projecting how the industries constituting the space sector—telecommunications, imaging, etc.—would grow from 2017 to 2040 under different assumptions on their individual profitability over time, then aggregating up to obtain projections for the space sector. We then calculate launch rates that would maximize the long-run value of the industry, and we calculate the time series of OUFs that would incentivize these optimal launch rates. The industry value is measured as net present value (NPV)—the long-run value of the entire fleet of satellites in orbit, accounting for both the financial costs of replacing satellites due to natural retirement and collisions as well as the opportunity cost of investing funds in satellites rather than capital markets. For instance, an NPV of $1 trillion in 2020 means the sum total of the stream of net benefits, looking from 2020 into the future and accounting for the timing of the net benefits, is $1 trillion.

Although our models are deliberately simplified for tractability, they are based on previously validated approaches to orbital object modeling (15, 16), and our calibrations allow us to reproduce observed trends and magnitudes in the growth of orbital debris and satellite stocks as well as the calculated collision risk (Fig. 3). Nonetheless, our projections should be interpreted as order of magnitude approximations that can be refined as needed by more detailed models. In these respects, our approach mirrors integrated assessment modeling approaches that have been useful in developing solutions to other natural resource management problems (e.g., ref. 19).

RESULTS

We project that shifting from open access to the optimal series of OUFs in 2020 would increase the NPV of the satellite industry from around $600 billion under BAU to around $3 trillion—a more than 4-fold increase (4.18- to 6.49-fold increases in 95% of parameter sets randomly drawn from their calibrated distributions) (Fig. 2D). Assuming a 5% market rate of return, an increase of $2.5 trillion in NPV would be equivalent to annual benefits of approximately $120 billion in perpetuity. The large immediate increase in NPV that we project in each OUF scenario, relative to BAU (Fig. 2A), comes primarily from the immediate effect of reducing launch activity while the satellite and debris stocks are suboptimally high (SI Appendix).

Based on our calculations (Materials and Methods), the optimal OUF starts at roughly $14,900 per satellite-year in 2020 and escalates at roughly 14% per year (aside from some initial transition dynamics) to around $235,000 per satellite-year in 2040. Rising optimal price paths are common in environmental pricing such as carbon taxes (20), although declining optimal price paths are also possible (21). The rising price path in this case partly reflects the rising value of safer orbits (resulting in rising industry NPV) (Fig. 2A) from the OUF. For comparison, the average annual profits of operating a satellite in 2015 were roughly $2.1 million. The 2020 and 2040 OUF values we describe amount to roughly 0.7 and 11% of average annual profits generated by a satellite in 2015.

Forgone NPV from the satellite industry in 2040—which is the cost of inaction under BAU—escalates from around $300 billion if optimal management begins in 2025 to around $700 billion if optimal management begins in 2035. Without OUFs, losses remain substantial even when active debris removal (implemented in the model as removal of 50% of debris objects in orbit each year) is available. In a best-case analysis where we assume debris removal is costless (i.e., it requires no payments nor additional satellites to implement), debris removal can only recover up to 9.5% of the value lost under open access. (The satellite industry’s willingness to pay for debris removal is not easily calculable in our model [SI Appendix, section 1.9.2].) At worst, debris removal can exacerbate orbital congestion via a rebound-type effect, causing additional losses on the order of 3% of the value already lost from open access (Fig. 4 and SI Appendix). The inability of debris removal to induce efficient orbit use is driven by open-access launching behavior and underscores the importance of policies to correct economic incentives to launch satellites.

DISCUSSION

The costly buildup of debris and satellites in low-Earth orbit is fundamentally a problem of incentives—satellite operators currently lack the incentives to factor into their launch decisions the collision risks their satellites impose on other operators. Our analysis suggests that correcting these incentives, via an OUF, could have substantial economic benefits to the satellite industry, and failing to do so could have substantial and escalating economic costs.

Escalating costs of inaction are a common feature of the tragedy of the commons, evident in several other sectors in which it went unaddressed for lengthy periods (22). For example, tens of billions of dollars in net benefits are lost annually from open-access or poorly managed fisheries globally (23). Similarly, open access to oil fields in the United States at the turn of the century drove recovery rates down to 20 to 25% at competitively drilled sites, compared with 85 to 90% potential recovery under optimal management (24). Open access to roadways—somewhat analogous to orbits—is estimated to create traffic congestion costs in excess of $120 billion/y in the United States alone (25). In contrast, there is still time to get out ahead of the tragedy of the commons in the young space industry.

The international and geopolitically complex nature of the space sector poses challenges to implementing orbital-use pricing systems, but these challenges need not be insurmountable. Theory suggests countries could each collect and spend OUF revenues domestically, without losing economic efficiency, as long as the fee’s magnitude was internationally harmonized (20). Engaging in such negotiations would be in the economic interests of all parties involved (26). An example of such a system is the Vessel Day Scheme (VDS) used by the Parties to the Nauru Agreement (PNA) to manage tuna fisheries. Under the VDS, PNA countries each lease fishing rights within their waters, using a common price floor (27). The European Union’s Emissions Trading System provides an example of an internationally coordinated tradable permit system (28). Notably, each of these pricing programs is built on a preexisting international governance institution (the Nauru Agreement and the European Union).

An OUF could also be built within existing space governance institutions, such as the Outer Space Treaty (29). For example, Article VI states that countries supervise their space industries, which provides a framework for OUFs to be administered nationally. Article II prohibits national appropriation of outer space but does not prohibit private property rights, potentially allowing for tradable orbital permitting.

#### Property is an external right – it is something that we don’t innately have a right to by virtue of existing, but acquire once we exercise our freedom. However, this is impossible when there is no state to create property divisions.

Stilz 1 (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

One key reason Kant does not accept the skeptical view of political authority, as put forward by Simmons, is that, when it comes to rights over external resources, he does not see the value of freedom as having the moral structure that Simmons attributes to it. Kant and Simmons, however, (along with Rousseau, whom we will examine in the next chapter) do share the same conception of freedom at the most basic level, a conception we can call freedom as independence. Since this notion of freedom as independence is one I will use throughout this book, it is worth a few words of clarification here. To be free-as-independent, as all these thinkers conceive it, is not to be forced to obey the will of another person; it is to enjoy a sphere of independent self-government within which others cannot interfere. This notion of freedom is thus particularly concerned with the relationships between persons. It is not concerned in the same way with whatever restrictions may be placed on our choices by natural obstacles or constraints. Being unable to hike up a mountain because a tree blocks the path does not make me less free, on the freedom- as-independence view. But being unable to hike up a mountain because you have tied me up, or because I have to seek your permission to engage in any leisure activities, does make me unfree. Freedom as independence, therefore, always refers to a relation between one person’s will and anoth- er’s: to be unfree is to be forced to obey someone else’s will rather than one’s own. For both Kant and Simmons, attaining this sort of freedom as indepen- dence requires people possess rights of property in external things. This is because the only way one person can be free from subjection to another person’s will is to have exclusive control over a sphere of the physical world within which those others are not allowed to interfere with his actions. And to have that sort of control is to have property. This exclusive sphere of property includes (a) rights of control over one’s own body and (b) rights of control over specific objects. While Kant agrees with Sim- mons that freedom requires property, he also claims that property is only possible through the state. As a result, he concludes that freedom as inde- pendence is only possible through the state. Since Kant believes that there is a basis in natural right for claiming private property, and he believes that private property requires the state, he concludes that the state is not an optional or voluntary association. Indeed, he goes so far as to suggest that we may be forced into the state against our will.18 Kant: External Freedom as Independence How does Kant reach these conclusions? Kant begins his Metaphysics of Morals with the argument that every human being possesses an innate right to external freedom, which as we have seen, is a right to indepen- dence from being coerced or constrained by another person’s will in car- rying out our choices. This, he says, is the “only original right belonging to man by virtue of his humanity.” Freedom (independence from being constrained by another’s choice [Willku ̈ r]), insofar as it can coexist with the freedom of every other in accordance with a universal law, is the only original right belonging to every man by virtue of humanity. This principle of innate freedom al- ready involves the following authorizations, which are not really dis- tinct from it (as if they were members of the division of some higher concept of a right): innate equality, that is, independence from being bound by others to more than one can in turn bind them; hence a human being’s quality of being his own master (sui iuris), as well as being a human being beyond reproach (iusti), since before he performs any act affecting rights he has done no wrong to anyone; and finally, his being authorized to do to others anything that does not in itself diminish what is theirs, so long as they do not want to accept it—such things as merely communicating his thoughts to them, telling or promis- ing them something, whether what he says is true and sincere or untrue and insincere (veriloquium aut falsiloquium); for it is entirely up to them whether they want to believe him or not. (MM, 6:238) As the sole human right, for Kant, the right to freedom as independence gives us several kinds of prerogatives. First, it gives us the title to do any- thing to other people that we may do to them without actually diminish- ing their freedom as independence, like simply communicating our thoughts to them: it thus grounds rights to freedom of speech and thought. Second, it gives us title to insist that we not be bound by any restrictions to freedom that are not reciprocal restrictions, that do not bind other people in the same way: it justifies a right to equal treatment. In addition, Kant holds that the innate right includes a minimum of bodily inviolability: someone who physically interferes with my body without my consent “affects and diminishes what is internally mine (my freedom), so that his maxim is in direct contradiction with the axiom of right” (MM, 6:250). Since my faculty of self-determination can only be exercised through my body, anyone who uses direct physical force on my body interferes with all possible expressions of my freedom.19 These titles—to freedom of thought and communication, to equal treatment, and to a minimum of bodily inviolability—together comprise our original claims to freedom. Unlike internal or metaphysical freedom, though, on Kant’s theory, ex- ternal freedom is defined by the individual’s capacity to set and pursue ends in the outside world, by acting. So in order to be externally free, I must be able to take up and use physical means—at the very least, spaces and also potentially objects—in order to carry out my choices. I am not externally free merely by thinking or wishing or setting myself a goal, without taking any concrete actions; I cannot be externally free in chains. I am externally free only when I can do something to further my projects. And this means that I must be able to actually take up some means to my ends without fear of your interference with my acts. External freedom thus involves the use of pieces of the physical world, where this use is potentially subject to interference by other persons.20 While all rights involve some sort of claim to external freedom, Kant draws a important distinction between rights that belong to us innately (like all those described above) and those we must acquire. Here, Kant differentiates between what he calls the internal and external “mine” (meum). Some rights—like the innate titles—are internally mine: I am born with them; they are my inalienable property; I do not have to do anything to acquire them. Other rights are acquired, and so belong to what Kant calls the external mine: these rights do not belong to us by birth, but require a particular act to be established (MM, 6:237). Kant refers to three broad kinds of acquired rights: rights to “(1) a (corporeal) thing external to me; (2) another’s choice to perform a specific deed (praestatio); (3) another’s status in relation to me” (MM, 6:248). These three kinds of acquired rights specify (1) my claims of ownership or prop- erty; (2) my contractual claims against others; and (3) my status as an occupant of a role, as a spouse, parent, or head of household.21 And shortly after introducing the innate right, interestingly, Kant suggests that it can more or less be laid aside in his political theory, in favor of a discus- sion of acquired rights: “It can be put in the prolegomena and the division of the doctrine of right can refer only to what is externally mine or yours” (MM, 6:238). Most of Kant’s political theory, then, is concerned not with the innate right, but instead with acquired rights, which define the precise bounds of our sphere of control over the external world. The fundamental task of a science of right, as Kant sees it, is to show how these rights to an “external mine” should be defined and guaranteed: “The doctrine of right wants to be sure that what belongs to each has been determined (with mathematical exactitude)” (MM, 6:233). As we shall see, Kant con- cludes that we cannot acquire these sorts of rights without a state. One reason for this is that unlike our titles to freedom of thought and communication or to minimal bodily inviolability, our rights to specific external objects are not naturally determinate. Freedom as independence requires that I have rights of control over a particular body (my own), but not that I have rights of control over a particular object. In order to be free-as-independent, I must have a right to some sphere of property, but it does not matter which specific objects I have a right to.22 Kant’s position can perhaps be made more intuitive if we reflect that any system of prop- erty will require the existence of a set of rules that is complex and to some extent conventional: rules about what sorts of things are eligible to be held as private property, what precisely are the conditions defining voluntary exchange, what constitutes an exploitative agreement, what are the condi- tions of publicly recognized spousal or parental rights, and how to distrib- ute opportunities, education, and income. The conditions specifying these sorts of rights would be imprecise and difficult to judge in a state of nature. The basic thought here is that while a principle of equal freedom pro- vides us some information about what just property distributions should look like, the principle’s content is underspecified, and therefore cannot be directly applied. The equal freedom principle suggests that whatever system of property we implement, it ought to be consistent with every- one’s possession of a zone of freedom that is guaranteed against others’ coercive interference. Nevertheless, many possible systems of property— collective allocation, market socialism, unfettered private ownership— are potentially consistent with that sense of equal freedom. And under each one of these many possible systems, there will again be many possible particular rules consistent with everyone’s freedom—rules about the pre- cise bundle of claims conferred by ownership, about how exchange is to be regulated, about which objects belong to which particular persons. And finally, any system of property will also have to include some aspects that are wholly conventional: rules about what precise formalities are required to conclude a contract, exactly how long a statute of limitations to institute, down, indeed, to what side of the road to drive on.

#### 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.

### 1AC – Underview

#### 1] 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.

### 1AC – Adv

#### 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

Description automatically generated

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.

#### Current regulatory guidelines fail – answers neg turns.

Boley and Byers 21. Aaron Boley is at the Department of Physics and Astronomy, The University of British Columbia, Vancouver, Canada and Michael Byers is at the Department of Physics and Astronomy, The University of British Columbia, Vancouver, Canada. 5/20/21. [Nature, “Satellite mega-constellations create risks in Low Earth Orbit, the atmosphere and on Earth,” <https://www.nature.com/articles/s41598-021-89909-7>] Justin

Companies are placing satellites into orbit at an unprecedented frequency to build ‘mega-constellations’ of communications satellites in Low Earth Orbit (LEO). In two years, the number of active and defunct satellites in LEO has increased by over 50%, to about 5000 (as of 30 March 2021). SpaceX alone is on track to add 11,000 more as it builds its Starlink mega-constellation and has already fled for permission for another 30,000 satellites with the Federal Communications Commission (FCC)1 . Others have similar plans, including OneWeb, Amazon, Telesat, and GW, which is a Chinese state-owned company2 . Te current governance system for LEO, while slowly changing, is ill-equipped to handle large satellite systems. Here, we outline how applying the consumer electronic model to satellites could lead to multiple tragedies of the commons. Some of these are well known, such as impediments to astronomy and an increased risk of space debris, while others have received insufcient attention, including changes to the chemistry of Earth’s upper atmosphere and increased dangers on Earth’s surface from re-entered debris. Te heavy use of certain orbital regions might also result in a de facto exclusion of other actors from them, violating the 1967 Outer Space Treaty. All of these challenges could be addressed in a coordinated manner through multilateral law-making, whether in the United Nations, the Inter-Agency Debris Committee (IADC), or an ad hoc process, rather than in an uncoordinated manner through diferent national laws. Regardless of the law-making forum, mega-constellations require a shif in perspectives and policies: from looking at single satellites, to evaluating systems of thousands of satellites, and doing so within an understanding of the limitations of Earth’s environment, including its orbits.

Tousands of satellites and 1500 rocket bodies provide considerable mass in LEO, which can break into debris upon collisions, explosions, or degradation in the harsh space environment. Fragmentations increase the cross-section of orbiting material, and with it, the collision probability per time. Eventually, collisions could dominate on-orbit evolution, a situation called the Kessler Syndrome3 . Tere are already over 12,000 trackable debris pieces in LEO, with these being typically 10 cm in diameter or larger. Including sizes down to 1 cm, there are about a million inferred debris pieces, all of which threaten satellites, spacecraf and astronauts due to their orbits crisscrossing at high relative speeds. Simulations of the long-term evolution of debris suggest that LEO is already in the protracted initial stages of the Kessler Syndrome, but that this could be managed through active debris removal4 . Te addition of satellite mega-constellations and the general proliferation of low-cost satellites in LEO stresses the environment further5–8 .

[Omitted Figures 1 and 2]

Results

The overall setting. Te rapid development of the space environment through mega-constellations, predominately by the ongoing construction of Starlink, is shown by the cumulative payload distribution function (Fig. 1). From an environmental perspective, the slope change in the distribution function defnes NewSpace, an era of dominance by commercial actors. Before 2015, changes in the total on-orbit objects came principally from fragmentations, with efects of the 2007 Chinese anti-satellite test and the 2009 Kosmos-2251/Iridium-33 collisions being evident on the graph.

Although the volume of space is large, individual satellites and satellite systems have specifc functions, with associated altitudes and inclinations (Fig. 2). Tis increases congestion and requires active management for station keeping and collision avoidance9 , with automatic collision-avoidance technology still under development. Improved space situational awareness is required, with data from operators as well as ground- and space-based sensors being widely and freely shared10. Improved communications between satellite operators are also necessary: in 2019, the European Space Agency moved an Earth observation satellite to avoid colliding with a Starlink satellite, afer failing to reach SpaceX by e-mail. Internationally adopted ‘right of way’ rules are needed10 to prevent games of ‘chicken’, as companies seek to preserve thruster fuel and avoid service interruptions. SpaceX and NASA recently announced11 a cooperative agreement to help reduce the risk of collisions, but this is only one operator and one agency

When completed, Starlink will include about as many satellites as there are trackable debris pieces today, while its total mass will equal all the mass currently in LEO—over 3000 tonnes. Te satellites will be placed in narrow orbital shells, creating unprecedented congestion, with 1258 already in orbit (as of 30 March 2021). OneWeb has already placed an initial 146 satellites, and Amazon, Telesat, GW and other companies, operating under diferent national regulatory regimes, are soon likely to follow.

Enhanced collision risk. Mega-constellations are composed of mass-produced satellites with few backup systems. Tis consumer electronic model allows for short upgrade cycles and rapid expansions of capabilities, but also considerable discarded equipment. SpaceX will actively de-orbit its satellites at the end of their 5–6-year operational lives. However, this process takes 6 months, so roughly 10% will be de-orbiting at any time. If other companies do likewise, thousands of de-orbiting satellites will be slowly passing through the same congested space, posing collision risks. Failures will increase these numbers, although the long-term failure rate is difcult to project. Figure 3 is similar to the righthand portion of Fig. 2 but includes the Starlink and OneWeb megaconstellations as fled (and amended) with the FCC (see “Methods”). Te large density spikes show that some shells will have satellite number densities in excess of n = 10−6 km−3 .

Deorbiting satellites will be tracked and operational satellites can manoeuvre to avoid close conjunctions. However, this depends on ongoing communication and cooperation between operators, which at present is ad hoc and voluntary. A recent letter12 to the FCC from SpaceX suggests that some companies might be less-thanfully transparent about events13 in LEO.

Despite the congestion and trafc management challenges, FCC flings by SpaceX suggest that collision avoidance manoeuvres can in fact maintain collision-free operations in orbital shells and that the probability of a collision between a non-responsive satellite and tracked debris is negligible. However, the flings do not account for untracked debris6 , including untracked debris decaying through the shells used by Starlink. Using simple estimates (see “Methods”), the probability that a single piece of untracked debris will hit any satellite in the Starlink 550 km shell is about 0.003 afer one year. Tus, if at any time there are 230 pieces of untracked debris decaying through the 550 km orbital shell, there is a 50% chance that there will be one or more collisions between satellites in the shell and the debris. As discussed further in “Methods”, such a situation is plausible. Depending on the balance between the de-orbit and the collision rates, if subsequent fragmentation events lead to similar amounts of debris within that orbital shell, a runaway cascade of collisions could occur.

Fragmentation events are not confned to their local orbits, either. Te India 2019 ASAT test was conducted at an altitude below 300 km in an efort to minimize long-lived debris. Nevertheless, debris was placed on orbits with apogees in excess of 1000 km. As of 30 March 2021, three tracked debris pieces remain in orbit14. Such long-lived debris has high eccentricities, and thus can cross multiple orbital shells twice per orbit. A major fragmentation event from a single satellite could afect all operators in LEO.

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

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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, or, alternatively, resentment when one country’s commercial sector essentially takes over a particular orbit

Competition over parts of the electromagnetic spectrum is another possible path for international security issues to arise from mega-constellations. Satellites are only as good as their ability to receive and communicate information, which requires spectrum; if one or a few entities from one country use up all the readily accessible spectrum for specific capabilities at certain orbits, that could possibly lead to confrontation as well. For the most part, the companies launching mega-constellations are largely based in the West, which can shape the global perception of their effects and intent – although there have been some plans for at least one Chinese company to launch a mega-constellation of potentially 13,000 satellites, and the South Koreans have expressed interest in their own mega-constellation.

#### Triggers space escalation and nuclear war.

Perez 21 – Veronica Delgado-Perez is a Staff Writer at The International Scholar. 12/14/21 – Note, doesn’t say date but most recent cited event is 2021, correct if I’m wrong. [The International Scholar, “Argument | The Commercialization of Space Risks Launching a Militarized Space Race,” <https://www.theintlscholar.com/periodical/12/14/2020/analysis-commercialization-space-risk-international-law-military-space-race>] Justin

With new actors on the game stage, conflicts of interest may arise. There is a risk that each actor adopts a kind of short-term Realist approach to space policy — one which is driven by self-interest in reaping the greatest benefits of extraterrestrial exploration and commercialization while controlling access to others. If unmitigated, states may choose to militarize outer space to gain a strategic edge over competitors and adversaries.

This process has already begun. Under the Trump administration, the Pentagon established the U.S. Space Force as a new branch of the Armed Forces to protect the country and allied interests in space. Already, Delta 4 — one of the U.S. Space Force’s missions — conducts strategic and theater missile warnings, manages weapon systems, and provides information to missile defense forces. The measure shows that for the U.S., outer space is not only a domain of scientific exploration but has the potential to become increasingly securitized.

With the impending expiration of the Strategic Arms Reduction Treaty (START) between the U.S. and Russia on February 5, 2021, a number of security dilemmas could arise. If the world’s two largest nuclear powers do not edge toward extending the treaty, Washington and Moscow risk returning to the era of unrestricted expansion of launch platforms and strategically-deployed nuclear warheads — potentially with the aid of military infrastructure in space.

Although President-elect Biden has expressed his interest in negotiating an extension of New START, how Moscow and Washington might proceed remains an open question. Bilateral progress towards a new arms-control regime would require establishing limits on the number and range of long- and mid-range missiles, establishing measures to limit the expansion of traditional missile deployment to space, and banning the deployment of nuclear weapons and weapons of mass destruction in outer space.

#### Debris triggers miscalculated war.

Robert Farley 22, Now a 1945 Contributing Editor, Dr. Robert Farley is a Senior Lecturer at the Patterson School at the University of Kentucky. Dr. Farley is the author of Grounded: The Case for Abolishing the United States Air Force (University Press of Kentucky, 2014), the Battleship Book (Wildside, 2016), and Patents for Power: Intellectual Property Law and the Diffusion of Military Technology (University of Chicago, 2020). 1/9/22. [19 Fourty Five, “Does A Space War Mean A Nuclear War?,” <https://www.19fortyfive.com/2022/01/does-a-space-war-mean-a-nuclear-war/>] Justin

The recent Russian anti-satellite test didn’t tell the world anything new, but it did reaffirm the peril posed by warfare in space. Debris from explosions could make some earth orbits remarkably risky to use for both civilian and military purposes. But the test also highlighted a less visible danger; attacks on nuclear command and control satellites could rapidly produce an extremely dangerous escalatory situation in a war between nuclear powers. James Acton and Thomas Macdonald drew attention to this problem in a recent article at Inside Defense. As Acton and MacDonald point out, nuclear command and control satellites are the connective tissue of nuclear deterrence, assuring countries that they’re not being attacked and that they’ll be able to respond quickly if they are.

For a long time, these strategic early-warning satellites were akin to a center of gravity in ICBM warfare. Nuclear deterrence requires awareness that an attack is underway. Attacks on the monitoring system could easily be read as an attempt to ~~blind~~ an opponent in preparation for general war, and could themselves incur nuclear retaliation. Thus, the nuclear command and control satellites are critical to the maintenance of nuclear deterrence. They make it possible to distribute an order from the chief of government to the nuclear delivery systems themselves. Consequently, their destruction might lead to hesitation or delay in performing a nuclear launch order.

It was only later that the relevance of satellites for conventional warfare became clear. Satellites could reconnoiter enemy positions and, more importantly, provide communications for friendly forces. Indeed, the expansion of the role of satellites in conventional warfare has complicated the prospect of space warfare. States have a clear reason for targeting enemy satellites which support conventional warfare, as those satellites enable the most lethal part of the kill chain, the communications and recon networks that link targets with shooters. Thus, we now have a situation in which space military assets have both nuclear and conventional roles. In a conflict confusion and misperception could rapidly become lethal. If one combatant views an attack against nuclear command and control as a prelude to a general nuclear attack, it might choose to pre-empt.

Nuclear powers have dealt with problems in this general category for a good long while; would a conventional attack against tactical nuclear staging areas represent an escalation, for example? Would the use of ballistic missiles that can carry either conventional or nuclear weapons trigger a nuclear response? Do attacks against air defense networks that have both strategic and tactical responsibilities run the risk of triggering a nuclear response? There’s also the danger that damage to communications networks designated for conventional combat could force traffic onto the nuclear control systems, further confusing the issue.

1. https://dictionary.cambridge.org/us/dictionary/english/unjust

   [↑](#footnote-ref-1)