### fw

#### Ethics must begin apriori,

#### 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.

#### [C] Naturalistic 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] 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.

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

#### [1] Performativity—freedom is the key to the process of justification of arguments. Willing that we should abide by their ethical theory presupposes that we own ourselves in the first place. Thus, it is logically incoherent to justify the neg arguments/standard without first willing that we can pursue ends free from others.

#### [2] Consequences Fail: [A] Every action has infinite stemming consequences, because every consequence can cause another consequence. [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] Aggregation Fails --- suffering is not additive can’t compare between one migraine and 10 head aches [D] Yes act/omission distinction – there are infinite events occurring over which you have no control, so you can never be moral

#### [3] Ethical frameworks must be theoretically legitimate. Any standard is an interpretation of the word ought. Thus, framework is a topicality debate about terms in the resolution. Prefer,

#### Resource disparities—a focus on evidence and statistics privileges debaters with the most preround prep which excludes lone-wolfs who lack huge evidence files. A debate under my framework can easily be won without any prep since only analytical arguments are required. Key to fairness so all people can engage

#### Resolvability: Clarity of weighing under interpretation of Kantianism: perfect duties above imperfect duties. Duties in right. Explicit categories that supersede other categories. All other FWs are consequentialist that use unquantifiable prob, mag, or prob x mag. Resolvability is an independent voter since otherwise the judge can’t make a decision.

#### [B] 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.**

### 1AC – Plan

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

#### Revising the Outer Space Treaty curbs the impact of space debris – timeframe is crucial.

Shah 20 – Sachin, 8/30/20, [“Aug 30 The International Legal Regulation of Space Debris,” CORNELL UNDERGRADUATE LAW & SOCIETY REVIEW, Administrative, Policy, Technology, <https://www.culsr.org/articles/the-international-legal-regulation-of-space-debris>] Justin

The body of legal regulations regarding the use of space (space being defined as the area above the jurisdiction of air law) by public and private entities is referred to as space law. Currently, there are only about five such regulations of space, the most significant of those being the United Nations’ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereinafter referred to as the Outer Space Treaty) of 1967. In this article, I would like to specifically describe and analyze the laws and regulations’ handling of the increasingly prevalent issue of space debris in orbit around Earth. The National Aeronautics and Space Administration (NASA) defines space debris as “any man-made object in orbit about the Earth which no longer serves a useful function.” [1] However, a major point of confusion discussed below is that the Outer Space Treaty does not explicitly define what it refers to as “space objects,” nor does it mention whether space debris are space objects. An excessive clustering of space debris is a problem for a few reasons. It may result in a phenomenon known as the Kessler Syndrome, in which there is a “cascade created when debris hits a space object, creating new debris and setting off a chain reaction of collisions that eventually closes off entire orbits.” [2] This endangerment of Earth’s future ability to explore extraterrestrial planets and life must be avoided at all costs. Furthermore, space debris in orbit around Earth limits the amount of available space for satellites to orbit, which may result in the Tragedy of the Commons: multiple actors will aggressively vie, in an arms race, for their right to space as it is a limited resource. [3] Space debris is thus a potentially pressing issue in our increasingly technological world. In this essay, I will analyze the existing regulation of space debris as outlined in the Outer Space Treaty, point out the issues with these regulations of space debris and discuss potential solutions, and, finally, discuss legal considerations for private enterprises as well.

The Outer Space Treaty of 1967 remains today’s leading regulation on the governance of outer space activities. A salient aspect of the Cold War was the space race between the United States and the Union of Soviet Socialist Republics (USSR) that occurred in the late 1960s. Before the nations engaged in their race to the moon, the United Nations enacted the Outer Space Treaty to ensure international peace by making the use of space equitable and fair. Articles VII and IX most closely deal with concepts of space debris, but it is important to note here that the Treaty does not specifically define space debris, and rather, governs the use of “space objects.” Article IX of the Treaty states that States “shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty,” and that exploration of outer space should avoid its “harmful contamination.” [4] Many scholars believe that conducting activities with regard to other States involves leaving areas free of space debris, and further that space debris constitutes a harmful contamination to the space environment. Article VII of the Treaty provides that each State is “internationally liable for damage to another State Party to the Treaty or its natural or juridical persons by such object or its component parts on the Earth.” [5] Thus, regulations are in place to incentivize States to mitigate the amount of space debris they create for fear of severe financial penalties. There are also four other international treaties on space governance: the Rescue Agreement, the Liability Convention, the Registration Convention, and the Moon Agreement. These treaties, while also important, all have fewer signatory parties and were often created for more specific activities, whereas the Outer Space Treaty was general in scope and widely adopted. [6]

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.

#### Private entities are non-governmental.

Dunk 11 – Frans G. von der Dunk, 2011, [“The Origins of Authorisation: Article VI of the Outer Space Treaty and International Space Law,” University of Nebraska] Justin

4. Interpreting Article VI of the Outer Space Treaty One main novel feature of Article VI stood out with reference to the role of private enterprise in this context. Contrary to the version of the concept applicable under general international law, where “direct state responsibility” only pertained to acts somehow directly attributable to a state and states could only be addressed for acts by private actors under “indirect,” “due care”/“due diligence” responsibility,18 Article VI made no difference as to whether the activities at issue were the state’s own (“whether such activities are carried on by governmental agencies” . . .) or those of private actors (. . . “or by non-governmental entities”). The interests of the Soviet Union in ensuring that, whomever would actually conduct a certain space activity, some state or other could be held responsible for its compliance with applicable rules of space law to that extent had prevailed. However, the general acceptance of Article VI as cornerstone of the Outer Space Treaty unfortunately was far from the end of the story. Partly, this was the consequence of key principles being left undefined.

#### Removal efforts are complements to the plan not the silver bullet.

Rada Popova 18, European Space Agency Project Co-Manager and PhD Faculty of Law @ Universitat zu Koln, “The Legal Framework for Space Debris Remediation as a Tool for Sustainability in Outer Space,” *Aerospace*, MDPI, doi:10.3390/aerospace5020055 \*adr = active debris removal, \*\*sdr = space debris remediation, \*\*OOS = on orbit servicing

In outer space, any launch creates space debris. Since the first man-made object was launched into space in 1957, more than 5600 launches have taken place [2]. In addition, incidents and collisions create additional space debris. As a result, human activities have caused significant negative effects on outer space, as during the past six decades near-Earth orbits have been filled with functional and non-functional objects, the overwhelming majority of which are debris. Of course, this observation is not relevant for the whole of outer space. For the purposes of this article, and of space law in general, the subject of interest is naturally restricted to the orbital regions that are accessible for man-made spacecraft and are used for space activities. The farthest space mission so far—Voyager-I—has left the solar system and entered interstellar space. Nevertheless, most human activities take place in low-Earth orbit (LEO) in an altitude between 200 and 2000 km used for the International Space Station, Earth observation satellites as well as some telescopes, medium-Earth orbit (MEO) in an altitude approximately between 2000 and 36,000 km mostly used for navigation, geodetic and communication satellites as well as geostationary Earth orbit (GEO) at approximately 36,000 km. Currently, there are 1738 functional satellites, of which 1071 are in LEO, 531 in GEO, 97 in MEO and 39 in elliptical orbits [3]. Currently, only 6% of the catalogued orbital population are functional objects. The number of non-functional objects that are trackable and contained in the Space Surveillance Network catalogue show that there are more than 21,000 larger than 10 cm. For smaller sizes, the estimates are based on statistical models, such as the NASA Standard Breakup Model [4] and in-situ measurements. The estimates include 150 million objects larger than 1 mm and 600,000 objects up to 1 cm. Moreover, 700,000 to 750,000 pieces of space debris larger than 1 cm have resulted from more than 200 on-orbit defragmentations [5]. As a consequence of the vast orbital velocity in LEO (8 km/s = 28,800 km/h), impacts with the smallest objects of 1 mm might cause degradation and damage to functional spacecraft. So far, shielding options have been developed, but they are only effective for fragments not larger than 1 cm. Impacts with larger objects have the potential to destroy functional satellites. This is linked to the decisive factor for the constant growth in debris: the ‘Kessler syndrome’—a cascade effect describing the fact that collisions between space debris result in an exponential growth in the orbital debris population which, once collisional break-up begins, will increase even if no new launches take place [6,7]. In the near future, a further “growth factor” which might additionally influence space debris propagation are so-called ‘mega-constellations’ that will consist of hundreds of small satellites with a short operational lifetime and restricted manoeuvring capability [8,9,10]. Table 1 lists recently announced satellite constellations aiming to provide global internet communications which have attracted much publicity. Some commonalities include: (1) the orbital altitudes above the popular 800–900 km Sun-synchronous orbits where atmospheric drag is non-existent; and (2) the compact mass of objects below 500 kg which suggests low-thrust electrical propulsions for orbital manoeuvers. The list of announced constellations could easily be extended. However, it is unlikely that all announced plans turn into reality. In such global business scenarios, typically the first-in-the-market along with two or three competitors apportion the market among themselves. This happened in the 1990s, when several global communication LEO constellation systems were announced of which only Iridium, Globalstar and Orbcomm made it into orbit. Keeping in mind that approximately 1000 active satellites are in LEO today, with the announced OneWeb mega-constellation this number will almost double [11], and if all three constellations on the list are launched, this would result in a tenfold increase in the LEO satellite population. The scope of challenges posed by orbital debris pollution is further underlined by the restricted cataloguing possibilities and the relative effectiveness of space situational awareness systems. The catalogue maintained by the US Space Surveillance Network provides information on 16,000 objects [13]. The Space Awareness System of the European Space Agency (ESA) can track objects bigger than 10 cm in low-Earth orbits and 0.3–1 m in geostationary orbits [14]. Thus, only a small fraction of the overall debris population can be detected. Furthermore, even if a collision probability can be calculated, manoeuvring may not be feasible, e.g., due to restricted time for reaction or lack of manoeuvring capabilities or control over the satellite. Unlike the environment of the Earth that might be cleaned-up and restored to a previous state, outer space is governed by celestial mechanics which make it practically impossible to clean-up debris through natural orbital decay and thereby bring the orbital environment to its original state. The natural decay of space debris is dominated by the drag caused by the residual atmosphere. The effect is dependent on the mass, the cross-sectional area, and the orbital position of the space object. Space debris at 800 km may remain in orbit for the next few centuries [15] and space debris orbiting at more than 1500 km will practically remain in outer space forever as there is not enough drag from Earth’s atmosphere any more at this altitude [16]. All of these factors make for an alarming picture. In general, one can distinguish between collisions (in which two objects are involved) and break-up events (which can occur if a satellite is breaking up by itself because of residual fuel in the tanks or a self-destruct mechanism). Although so far only a few on-orbit collisions have occurred [17] (e.g., the 2007 anti-satellite missile test conducted by China on its Feng-Yun 1C satellite and the 2009 collision between the inactive Russian satellite Cosmos 2251 and the active US satellite Iridium 33), a dramatic growth in the space debris population has been caused by these accidents. Alone the 2009 collision led to the creation of a space debris cloud of 2000 pieces of debris larger than 10 cm and thousands of smaller pieces which might remain in orbit for years [18]. The number of collisions that will lead to further incidents will grow over time. This risk is particularly high for near-polar LEO orbits at around 800–900 km and the GEO region, as approximately 62% of functional satellites are in LEO and 31% in GEO [3,19]. As LEO is the region of greatest concern for the uncontrolled growth of debris, currently, the following mechanisms are considered vital to mitigate the debris population to a sustainable level: (1) post-mission disposal; (2) passivation; and, (3) active debris removal. While a few years ago, less than 50% of the missions in GEO were compliant with space debris mitigation standards [20], in 2016, more than 80% successful clearance attempts were undertaken in GEO and 66% in LEO [21]. It has been estimated that compliance with mitigation rules, e.g., through ensuring that 90% of the launches are in compliance with the 25-year rule of post-mission disposal as provided by the Space Debris Mitigation Guidelines of the Inter-Agency Space Debris Coordination Committee (IADC) [22] and no new on-orbit explosions occur, will not be enough to reverse the negative trend in the most used orbits. These findings were studied in detail by the IADC in simulation campaigns among the participating partners, and recently confirmed by reference simulation in the frame of the H2020-ReDSHIFT project [23]. Furthermore, even if up to 10 large objects are removed from low-Earth orbit per year, the debris growth in LEO is still likely to evolve negatively in the next 200 years [1]. Long-term reference scenarios conducted recently within the H2020-ReDSHIFT project used a space debris population from LEO to GEO and a projection time frame of 200 years. Assuming 2–3 self-induced in-orbit explosions over the next 15 years, a post-mission disposal success rate of 60% (on 25-year orbits in LEO and to graveyard orbits in GEO) and collision avoidance against all objects in LEO, the results show that remediation of two objects per year decreases 12% of the final population [24]. Thus, it is expected that a combination of mitigation and remediation measures is needed to overcome the negative trends which will, with time, evolve into a catastrophic state if no effective action is undertaken. While an established (voluntary) framework for non-binding mitigation measures and some state practice exists through the adoption of specific measures for space debris mitigation in the national space laws of some states [25], the legal implementation of space debris remediation (SDR) is still in the making. The reasons for the slow pace of this development are, on the one hand, of a technological nature and, on the other, are due to the complex legal problems posed by SDR. In the following sub-section, an overview of the legal framework and the main challenges for establishing rules on SDR will be given. 2.2. The Legal Framework for Space Activities The legal framework for outer space activities consists of five international treaties (the 1967 Outer Space Treaty (OST) [26], the 1968 Rescue Agreement [27], the 1972 Liability Convention [28], the 1975 Registration Convention [29], and the 1979 Moon Agreement [30]) adopted in the period between 1967 and 1979, resolutions of the General Assembly of the United Nations adopted since 1982, and the national space legislation of more than 20 countries. Since 1996, a tendency can be observed to adopt sets of measures and instruments on the international level that re-interpret concepts entailed in earlier Treaties [31]. The Outer Space Treaty is sometimes referred to as a “Constitution” of space law as it contains the basic principles for space activities, provides the basis for the next four treaties, and has gained significant support, with 107 signatories as of January 2018 [32]. Thereby the Outer Space Treaty is considered to contain principles of customary international law, which bind not only state parties to the treaty but also non-signatories [33]. Such customary principles are Articles I–IV, VI, VII, VIII and arguably also Art. IX OST and have served as a basis for the development of the further treaties on space law. International law designates outer space and celestial bodies the status of a global common—a domain beyond national jurisdiction which is not subject to national sovereignty. This is laid down in Art. I para. 1 of the 1967 Outer Space Treaty [26], according to which the use and exploration and use of outer space should be regarded as the ‘province of all mankind’. While it is difficult to define this notion in concrete terms, there is no doubt that outer space should be open to the use of all states, regardless of their current economic or technological development [34]. Thus, the use of outer space as a global common, including economic and non-economic uses as well as scientific exploration of outer space and celestial bodies, should be free—in the sense of remaining accessible for all states and their nationals on the same terms, without discrimination of any kind. Accessibility as a means to carry out space activities should be preserved not only in the short-term perspective, but on a long-term basis as the dependency of humans on outer space will only grow in the future. As a consequence, the sustainability of space activities must be ensured. It is, therefore, worthwhile discussing whether, if such activities are endangered by the negative consequences of orbital pollution, the rights of states to freely exercise their activities in outer space as stipulated in the Outer Space Treaty can be safeguarded. ● The Freedoms vs. the Usability of Outer Space The principles contained in the Outer Space Treaty and the subsequent four treaties on space law set out a framework for human activities in space that can be characterized as a system of freedoms and limitations. Art. I of the OST provides that there shall be freedom of the exploration, use and scientific investigation of outer space and celestial bodies. “Use” means both the economic and non-economic use of outer space [35]. The term “exploration”, however, stipulates not so much consuming or profiting from space but rather the discovery of something new or yet unknown. Scientific investigation might but must not necessarily overlap with “exploration” as scientific activities might be aimed also at already discovered objects or areas. The term “freedom” means that all addressees of these provisions (primarily states and also nationals of states, in as much as states entitle them to do so through national space legislation) are entitled to use, explore or scientifically investigate outer space without the need to ask for permission from other states or an international entity. At the same time, this means that such activities shall not be hampered, e.g., by harmful interference or other impairment. However, the freedoms of outer space are not absolute, as they are not limitless. Limitations are certain exceptions contained in Article I of the OST itself as well as in other treaty provisions of the corpus iuris spatialis. Such as, inter alia, the common benefit clause (Art. I para 1 OST), Art. III OST and Article 2 UN Charter, Art. IV para 1 OST, Art. VII OST and Art. 2 and 3 Liability Convention. Some of these limitations are specifically relevant for the sustainable use and exploration of outer space and celestial bodies, and thus for SDR, as sustainability is an indispensable condition for the usability of outer space. It is thereby required that the use of outer space by present generations takes place on the basis of responsibility towards future generations, which is reiterated by the specific nature of outer space as a global common. ● The notion of the “province of mankind” In Art I para 1 of the OST and Art. 4 of the Moon Agreement the use and exploration of space and celestial bodies are declared to be the “province of mankind”. Although no definition of the term “mankind” has been provided, this notion is an expression of the equal right of all states (regardless of the fact that they are space-faring or developing countries) and all generations (present and future) in the use and exploration of outer space and celestial bodies [36]. ● The Common Heritage of Mankind (CHM) concept (Art I para 1 OST, Art. 11 MOON) The purpose of this doctrine, which is not restricted only to space law, is the protection of certain areas of great importance outside national territory and ensuring their integrity for future generations. It is reflected the United Nations Convention on the Law of the Sea [37] and can also be found in the Preamble of the Antarctic Treaty [38] without being explicitly mentioned there. As with the province of mankind clause, the notion of CHM brings forward the particular status of outer space as a domain which should be open and preserved for all states and generations. ● Military uses of outer space Another important limitation to the freedoms of outer space is contained in Art. IV of the OST. Certain military uses of outer space, such as the placement of nuclear weapons and weapons of mass destruction in orbit around the Earth, their installment as well as the establishment of military bases and the testing of weapons on celestial bodies or their stationing anywhere in space, are prohibited. Furthermore, para 2, Art. IV provides that outer space may be used for “peaceful purposes only”. While the exact meaning of the term “peaceful purposes” is contested, the leading opinion interprets it as non-aggressive, meaning that some military activities are acceptable if exercised lawfully (e.g., the right to self-defence, Art. 51 UN Charter) [39]. This provision is relevant especially as e.g., anti-satellite testing and other military destructive activities can produce a considerable amount of debris. ● The environmental protection of outer space A further limitation is contained in Art. IX of the OST, which is considered the basis for the environmental protection of outer space. By providing that states parties “shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other states” [40], this provision reaffirms the common character of outer space. Furthermore, it provides that the “harmful contamination” of outer space and celestial bodies shall be avoided (Art. IX sent. 2 OST) and, in case activities can potentially cause “harmful interference with activities of other states parties”, consultations should be undertaken before the activity is carried out or continued (Art. IX sent. 3 and 4 OST). Although the concepts used in Art. IX are difficult to define, it expresses the idea that there shall be protection of space activities from all forms of interference that might cause harm or pose a risk of harm to other states [40]. Thereby, Art. IX of the OST contains the principle of co-operation (Art. IX sent. 1 OST) which is also found in Articles III and X of the OST and was further developed in the other four treaties on space law. However, no specific requirements for states as to how to exercise their activities in a manner that would ensure that the standard of care towards of activities of other states are provided. Thus, the legal framework provides for some general direction for co-operation between the users of outer space but concrete instruments on how to ensure sustainability need to be formulated in more detail. In fact, the treaties on space law neither expressly prohibit the creation of space debris nor impose an obligation on states and their space actors to remove space objects from orbit. Mitigation measures have so far only been adopted as voluntary, non-binding instruments and have been partly adopted in the national laws of some states [25]. In sum, it can be stated that a general obligation to protect the environment of outer space results from the common interest of the community of states to access and use outer space. If a narrow interpretation of the theory of erga omnes obligations is followed, it is the currently 107 State parties to the OST [32] which represent the community having a common interest in the protection of the usability of outer space. If the view is followed, that due to the broad support and the principle-based character of some of its norms, the Outer Space Treaty has at least partly customary character, it can be argued that the 107 State Parties represent the global community so that the global community has a legal interest in the environmental protection of outer space., but a concrete, binding way of action for SDR cannot be derived from existing space law [41]. 2.3. The Future of the Outer Space Environment 2.3.1. Sustainability as a Condition for the Usability of Outer Space What, then, can be done? In the context of the work of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), the sustainability of outer space is defined by the stability and safety of its environment which shall be “open for exploration, use and international cooperation by current and future generations (…)” [42], based on non-discrimination. Thus, sustainability is a condition for any future access to and use of outer space. On the technical level, both mitigation and remediation concepts **have been developed** in order to facilitate the protection of near-Earth space from space debris aiming to “maintain the conduct of space activities indefinitely in the future” [43]. Out of the factors playing a role in the creation and distribution of space debris (orbit dynamics, air-drag on the residual atmosphere, on-orbit explosions, collisions, surface degradation slag from solid rocket motor firings, launch rates of future missions, operational practices and mitigation practices) a few will be tackled here that are the direct result of man-made activities. In the style of the “leave no trace” paradigm of sustainable outdoor activities in nature here on Earth, several guidelines have been formulated as well for space activities; for instance, guidelines for the disposal of defunct satellites which are to be removed from LEO within 25 years after their end-of-life. In practice, this typically is realized by a final orbit maneuver which lowers the perigee as much as possible to ensure it will re-enter within 25 years. Such an action at the end of a mission is also beneficial with respect to another paradigm, which calls for a minimum impact on the environment. In a last orbit maneuver, all the leftover fuel can be used, which is one element of the passivation of satellites at their end-of-life. In general, passivation covers all forms of stored energy on board, let it be kinetics of the gyros, charge of batteries, and also fuel in the tanks. Passivation aims at the minimization of self-induced break-ups and it is expected that the number of explosions can be controlled very well by proper passivation and their severity can be significantly reduced (because e.g., the residual fuel cannot self-ignite when the tank corrodes and lead to a complete destruction). That said, post-mission disposal considerations are to be seen in opposition to the space mission operators’ desire to extend the nominal mission operation. Naturally, this is also a sustainable approach. It is usually better in terms of global sustainability to continue using old equipment (and accepting additional maintenance to a certain economic level) instead of throwing it away and replacing it. In space, however, maintenance is not easily done. Therefore, the risk of a critical failure on-board a satellite increases towards longer mission durations. From the sustainability point of view, it remains unclear when it is best to simply extend a mission and accept the higher risk of losing control over the satellite and not being able to perform disposal at all or to terminate the mission with a proper disposal maneuver and passivation. The aforementioned example highlights that, as in other domains, there is a usually a conflict of interest between the immediate needs of spacecraft operators and the higher good of preserving the space environment in accordance with the treaties on space law. Space mission designers will always assess the collision probability due to space debris and define a tolerated risk threshold for their assets. In case the desired target orbit is already too densely populated with debris, it is possible to re-design and move to other, higher orbits. What is yet to be done is to strike an agreement at a global level to define acceptable inflictions on the space environment that are tolerable. An analogy can be drawn to the consensus on the two-degree goal in climate change. Maybe it is possible to discuss and formulate similarly memorable and easily understandable goals for the outer space environment. Although it is unlikely that the final sentence will state “Two collisions per year are tolerable”, such goals would provide the necessary foundation for further action. 2.3.2. The Need to Act As any significant accident in outer space leads to irreparable damage in orbital stability, it is not enough to mitigate the production of new space debris. In particular, the fact that in higher altitudes objects may remain over hundreds or even thousands of years, means that a potentially catastrophic effect for functional objects remains. Mitigation can indeed contribute to stabilizing the outer space environment, but further measures are necessary. For example, in LEO mitigation measures can only slow down the pace of growth but are not enough to stop it. Therefore, further measures aiming at reducing the existing space debris population through remediation are needed if the most used orbits are to remain usable. For example, a long-term scenario with five ADR missions per year clearly shows that remediation for large objects would lower the number of collisions in densely populated orbital regions from 10 to 5 and is, thus, advantageous [23].

### Offense

#### [1] Extending neoliberal polices in space violate universal law through continued injustice.

Segobaetso 18 Segobaetso, Benjamin. *Ethical Implications of the Colonization, Privatization and Commercialization of Outer Space*. SJEP

It can be argued through Kantian ethics that our record here on Earth paints a picture of neoliberal and capitalist policies with tendencies to favour the highest bidder at the exclusion of the under privileged and puts profit first at the expense of the environment. For Kantians, there are two questions that we must ask ourselves whenever we decide to act: (i) Can I rationally will that everyone act as I propose to act? If the answer is no, then we must not perform the action. (ii) Does my action respect the goals of human beings? Again, if the answer is no, then we must not perform the action. Kantian ethicists would argue that extending to space neoliberal and capitalist policies is immoral because these systems create economic disparities and life threatening environmental injustices; therefore, they are set up in a way that we could not rationally will everyone to act the way they act either here on Earth or in space. Also, Kantian ethicists would ask whether the action of extending neoliberal and capitalist policies to space would respect the goals of extra-terrestrial intelligent life if any rather than merely using them for humans’ own purposes? If the answer is no, then the participating agent must not perform the action. Kant wrote on the possible existence of extra-terrestrial intelligent species in the final pages of the last book that he published, Anthropology from a Pragmatic Point of View [Anthropologie in pragmatischer Hinsicht] (1978). In this publication, Kant hinted that the highest concept of the Alien species may be that of a terrestrial rational being [eines irdischen vernünftigen ]; however, he argued that it will be difficult to describe its characteristics because there is no knowledge available of a non-terrestrial rational being [nicht irdischen Wesen] which could be used as a reference in regards to its properties and ultimately classify that terrestrial being as rational. This dilemma will continue until extraterrestrial intelligent life is discovered because comparing two species of rational beings has to be on the basis of experience, but that experience has not been possible yet (Kant, 237-238). In applying Kant’s deontological moral theory, it must first be recognized that Kant visualized a kind of respect in which we all can recognize every rational being exists as an end in itself (1) as being not fully comprehensible by any human understanding, (2) as being an end in him- or herself, and (3) as being a potential source of moral law (Kant, 2012). In this regard, since Kant insinuated that the highest concept of the extraterrestrial intelligent species may be that of a terrestrial rational being [eines irdischen vernünftigen ]; that implies any encounter with extra-terrestrial intelligent life will compel us under the deontological moral theory to recognize that life as being not fully comprehensible by any human understanding, as being an end in itself, and as being a potential source of moral law (Kant, 2012). It must be realized that Kant’s deontology theory does not go without criticism by critical theorists who believe in dismantling all systems of oppression.

#### [2] The categorical imperative rejects states and companies desires to profit off of space for themselves.

Wurth 19Wurth, Nicolas. “SPACE ETHICS IN INTERNATIONAL SPACE LAW: ADVANCEMENT AND ENFORCEABILITY.” *University of Luxembourg* , 2019. SJEP

Hans Jonas, german philosopher, studied the concept of ethics related to Kant’s “Categorical Imperative” under the angle of modern technology allowing humans to surpass their own frontiers.10 By extending the aforementioned Categorical Imperative to modern technologies, (which includes space activities) he wrote: “Act that the effects of your action are compatible with the permanence of genuine human life. [...] Act so that the effects of your action are not destructive of the future possibility of such life [...] Do not compromise the conditions for an indefinite continuation of humanity on earth.”11 The conceptualization of ethics implies to evaluate behavior, actions and activities of space actors.12 Related to space activities, ethical behavior shall therefore be aligned with a sort of conduct that is to be followed, independently of “any natural desires.” Such an understanding does naturally challenge States’ desires to diversify their economy via the adoption of a legal framework on space activities13 or the profit-making goal of a company which has the technical ability to conduct a profitable space activity such as space-mining?

#### [3] Promise breaking – private entities appropriating space violates articles 2 and 4 of the OST

Wisaeus 17 Per Wisaeus JURM02 Graduate Thesis Graduate Thesis, Master of Laws program 30 higher education credits Supervisor: Moa De Lucia Dahlbeck Semester of graduation: Period 1 Autumn semester 2017 “Our future march on Mars – a walk on a well-known path” FACULTY OF LAW Lund University <https://lup.lub.lu.se/student-papers/record/8930484/file/8933833.pdf> SJMS

3.5 Appropriation of space The word appropriation is used in Article II OST but it does not exist consensus nor an exact definition of its meaning. Traditionally, appropriation have had the meaning of taking control over an area to use it exclusively and with a long-term intention.129 As mentioned above it is clear that the difference between use and appropriation is not entirely clear. I will in the following use the meaning of appropriation as defined in Definition of terms in this thesis, and present aspects of it below 3.5.1 Physical appropriation of parts of space Whether something is even possible to appropriate is due to if it is possible to control and possess. The possibility to appropriate outer space has the problem of the difficulty of defining outer space due to the lack of landmarks. Article II OST and its prohibition of national appropriation is regarding outer space and celestial bodies. As an example of the difficulties of defining areas in space are the different opinions on the limits of air space contra outer space. In simple terms: where does the sky end and outer space start? Therefore, it is difficult to envisage an appropriation of parts of outer space. A celestial body has the advantage of being tangible and possible to locate. 130 Another aspect of the problem is the fact that space law is not clear on what constitutes a celestial body, which opens up for the possibility of circumventing the prohibition of Article II OST by appropriating asteroids or meteorites. This is, as much else in space law, not completely clear.131 As mentioned earlier, it can be said that the UN claimed jurisdiction of the whole outer space with its declarations adopted in 1961 and 1963. One of the main objections to this relies on the fact that the whole outer space is enormous and ever-expanding and human jurisdiction and legal regulation cannot be applicable to the whole universe due to the absurdity of the claim. 132 Therefore, it is only reasonable to limit the jurisdiction to our solar system.133 Even this is a liberal limitation since the furthest a human made space object has travelled is outside our planet system.134 Therefore a starting point for appropriation would be to actually be able to physically access the object. In order to appropriate a celestial body in space one would have to be able to control it. In order to control a celestial body a starting point is to be able to reach it. The conclusion is that if one is able to both reach a part of outer space or a celestial body and define it and maintain a presence, one would be able to theoretically appropriate it. 3.5.2 The legality of appropriation of space Whether it is possible to legally appropriate anything in space has been and is under discussion. Within the field of space law there is an ongoing discussion on Article II of OST. The relevant Article prohibits national appropriation. The wording of the Article has opened up for a vivid discussion about its precise meaning. There are mainly three standpoints regarding appropriation in space. These are: OST allows appropriation, OST prohibits appropriation and appropriation is not legally enforceable. I will examine each three in order in the following sections. 3.5.2.1 Private and international appropriation Whether one can decide if appropriation is allowed by OST is depending on what type of appropriation it is. National appropriation refers to when a state claims and takes control over a celestial body, which is clearly prohibited by Article II OST. This option will not be further discussed due to the clear language of OST. Private appropriation has the meaning of a private entity taking control over a celestial body. The third possibility is international appropriation which has not been thoroughly discussed within doctrine. The meaning of international appropriation means the appropriation of a celestial body by an international organization representing mankind. The conclusion that it is acceptable to appropriate an object in space based on this argument can be reached through an e contrario reading of Article II OST: Outer space, including the Moon and other celestial bodies, is not subjected to national appropriation by claim of sovereignty, by means of use or occupation or by any means. [Emphasis added] Of interest is the word ‘national’, implying that appropriation is allowed if it is not conducted under national cover. This interpretation has been supported by various authors but also contested by others. The supporters of this theory put emphasis on the notion that the word ‘national’ is used. It is seen as a way of narrowing down the applicability of the Article. Because the interpretation has made the Article’s applicability exclusive to national appropriation it would be possible to appropriate parts of space as a nonstate. Since Article II does neither mention explicitly private individuals or enterprises nor international organizations, it opens up for the possibility of appropriation.135 3.5.2.1.1 Private appropriation Those who favor private appropriation, such as Stephen Gorove, come to the frank conclusion that a private entity could lawfully appropriate parts of space because of the lack of explicit prohibition.136 This loophole theory is rejected by most authors, however. 137 One major flaw in Gorove’s argumentation is the overlooking of Article VI OST. Article VI OST prescribes that states have the responsibility for activities in outer space and other celestial bodies, including the Moon. Activities include both activities made by governmental as well as non-governmental organizations. Activities are not necessarily appropriation but it could be, see discussion in 3.4 Freedom of exploration, use and access. As mentioned earlier, the OST does not bind private entities per se, but private entities are forced to obey the OST due to the fact that a private entity is entitled to the freedoms set out in the OST via its supervising government. In theory, a private entity could appropriate i.e. a celestial body but its supervising state would be responsible for it and would most probably prevent the appropriation. However, it would be too easy for states to circumvent the state-prohibition by licensing private companies to appropriate space. Those arguing in favor of this position refer to Articles VI and VII of OST since these Articles proclaim that states are responsible for national activities in space. 138 Even if OST should not be regarded as prohibiting private appropriation and a private appropriation took place an appropriation wouldn’t be able to stand for itself without any support of a state. Private property cannot exist without a state endorsing it. Since at least one state would have to endorse the appropriation, Article II OST would once again be an obstacle for the appropriation.139

### Underview

**[1] Aff gets 1AR theory and RVIs – otherwise the neg can be infinitely abusive and there’s no way to check against this – meta theory also precedes the evaluation of initial theory shells because it determines whether or not I could engage in theory in the first place. 1ar theory is drop the debater, competing interps and the highest layer, the 1ar is too short to win both theory and substance. no 2NR paradigm issues, responses to ac args, theory, or RVIs because a) It becomes impossible to check NC abuse if you can dump on reasons the shell doesn't matter in the 2n.**

#### [2] Presumption and Permissibility affirm: a] Statements are true before false since if I told you my name, you’d believe me. b] If anything is permissible, then so is the aff since there is nothing prohibiting us.

### Underview 2

#### The advantage is Debris:

#### Privatization of space is unsustainable and increases debris – triggers the Kessler Syndrome

Thompson 21 [Clive, 11/17/21, Clive Thompson is a contributing writer for the New York Times Magazine, a columnist for Wired and Smithsonian magazines, and a regular contributor to Mother Jones. He’s the author of Coders: The Making of a New Tribe and the Remaking of the World, and Smarter Than You Think: How Technology is Changing our Minds for the Better. He’s @pomeranian99 on Twitter and Instagram, “Get Ready for the “Kessler Syndrome” to Wreck Outer Space,” OneZero, <https://onezero.medium.com/get-ready-for-the-kessler-syndrome-to-wreck-outer-space-7f29cfe62c3e>] Justin

Back in 1978, the astrophysicist Donald Kessler made an alarming prediction: Space junk could wreck our ability to keep satellites aloft. In a fascinating paper, Kessler noted that “low earth orbit” — a region between 99 miles and 1,200 miles up — was getting pretty crowded. In 1978 there were already 3,866 objects being tracked in space. That included satellites used by scientists (say, to monitor weather) or spy agencies. It also included a lot of debris: Every time a rocket launches a satellite into orbit, it tends to leave stray bits of material. The thing is, when objects are zooming through space about 2 km/s, even something as tiny as a chip of paint can smash through glass or steel. Pieces of debris become bullets. What Kessler predicted is that sooner or later, objects in low-earth orbit would start colliding, and produce chain effects, like billiard balls colliding on a crowded pool table. If a piece of debris hit a satellite, it would produce more debris, which would to increase the risk of other collisions … and so on, and so on. At some point, you could reach a tipping point. There’d be so many chunks of debris that collisions would be inevitable, leaving low-earth orbit a junkyard where no satellites could survive. Remember the scene in Wall-E where they blast off Earth, and the planet is utterly ringed with crap? That’s what Kessler worried about. Except in our situation the pieces of junk could be quite small — billions of objects the size of grains of sand, which is actually a lot harder to deal with, because you can’t see it coming. In essence, Kessler predicted we could create an artificial asteroid belt of junk: The result would be an exponential increase in the number of objects with time, creating a belt of debris around the earth. This process of mutual collisions is thought to have been responsible for creating most of the astroids from larger planetlike bodies. Space folks began calling this the “Kessler Syndrome”. It was hard to predict when this might start happening. Kessler worried that conditions could be ripe by as early as 2000. Thankfully, that estimate turned out to be premature. But wow, it looks like it might happen soon. What’s happened recently that makes the “Kessler Syndrome” more likely? A couple of things: Way more satellites are going up The pace at which satellites are going up in the sky is simply exploding. Back when Kessler wrote his paper in 1978, we humans were launching about 53 new satellites a year. Going to space was hard. But now launches are an order of magnitude more common, and they’re increasing in pace rapidly. SpaceX in particular is launching oodles of satellites as it builds its orbital Internet-access service Starlink. In the last two years, it has put 1,740 satellites in low-earth orbit, with plans to eventually shoot 30,000 up there. This is part of a larger trend, which is … The privatization of outer space The private sector is rapidly becoming the dominant actor in space. There’s a huge demand for satellite data — everyone wants better info about weather, crops, traffic patterns, tree coverage, emissions, you name it, on top of the explosive use of satellites for communication and Internet. SpaceX’s remarkable innovations in rocketry (the leading folks, though others are following in their footsteps) have made it cheaper than ever to get a satellite into orbit. It is unlocking a huge pent-up demand for near-earth-orbit tech. More launches mean not only more intentional objects in orbit but unintentional ones — bits of rocket parts and detritus from launches.

#### Privatization exponentially increases the curve but ending dangerous missions prevents it.

Bernat 20 [Pawel, 2020, Military University of Aviation, “ORBITAL SATELLITE CONSTELLATIONS AND THE GROWING THREAT OF KESSLER SYNDROME IN THE LOWER EARTH ORBIT,” SAFETY ENGINEERING OF ANTHROPOGENIC OBJECTS, 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

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.

#### Debris causes nuclear war---Noko, Iran, and China.

Beauchamp 14 – Zack, 4/21/14, Zack Beauchamp is a senior correspondent at Vox, where he covers global politics and ideology, and a host of Worldly, Vox's podcast on foreign policy and international relations. His work focuses on the rise of the populist right across the West, the role of identity in American politics, and how fringe ideologies shape the mainstream. Before coming to Vox, he edited TP Ideas, a section of Think Progress devoted to the ideas shaping our political world. He has an MSc from the London School of Economics in International Relations and grew up in Washington, DC, where he currently lives with his wife, daughter, and two (rescue) dogs [“How space trash could start a nuclear war,” Vox, <https://www.vox.com/2014/4/21/5625246/space-war-china-north-korea-iran>] Justin \*Brackets added for ableist language

If debris from a Chinese test destroys a US military satellite, the US could mistake it as a preemptive strike against its space capabilities — some of which are designed to detect nuclear missile launches. If the US thinks China is trying to take out its ability to detect a nuclear launch, things could get very bad, very quickly. Accidents aren't the only concern. Zenko also worries about intentional space attacks, either during peacetime or a crisis. Here, Iran and North Korea are probably bigger threats, though their ASAT capabilities are far from proven. North Korea has a pattern of ~~crazy~~ [irrational] military moves designed to extort concessions from South Korea and the West; it could extend that behavior to space. Iran, according to Zenko, "already views space as a legitimate arena in which to contest US military power." He worries that Iran might fire missiles into space "during a major crisis, especially if it believes war is imminent — an assessment that could have self-fulfilling consequences."

#### Any nuclear war causes extinction – ice age and famine.

Steven Starr 15 [Director of the University of Missouri’s Clinical Laboratory Science Program, as well as a senior scientist at the [Physicians for Social Responsibility](http://www.psr.org/). He has worked with the Swiss, Chilean, and Swedish governments in support of their efforts at the United Nations to eliminate thousands of high-alert, launch-ready U.S. and Russian nuclear weapons. “Nuclear War: An Unrecognized Mass Extinction Event Waiting To Happen.” Ratical. March 2015. <https://ratical.org/radiation/NuclearExtinction/StevenStarr022815.html>] TG

A war fought with 21st century strategic nuclear weapons would be more than just a great catastrophe in human history. If we allow it to happen, such a war would be a mass extinction event that [ends human history](https://ratical.org/radiation/NuclearExtinction/StarrNuclearWinterOct09.pdf). There is a profound difference between extinction and “an unprecedented disaster,” or even “the end of civilization,” because even after such an immense catastrophe, human life would go on. But extinction, by definition, is an event of utter finality, and a nuclear war that could cause human extinction should really be considered as the ultimate criminal act. It certainly would be the crime to end all crimes. The world’s leading climatologists now tell us that nuclear war threatens our continued existence as a species. Their studies predict that a large nuclear war, especially one fought with strategic nuclear weapons, would create [a post-war environment in which for many years it would be too cold and dark to even grow food](http://climate.envsci.rutgers.edu/pdf/RobockToonSAD.pdf). Their findings make it clear that not only humans, but most large animals and many other forms of complex life would likely vanish forever in a nuclear darkness of our own making. The environmental consequences of nuclear war would attack the ecological support systems of life at every level. Radioactive fallout, produced not only by nuclear bombs, but also by the destruction of nuclear power plants and their spent fuel pools, would poison the biosphere. Millions of tons of smoke would act to [destroy Earth’s protective ozone layer](https://www2.ucar.edu/atmosnews/just-published/3995/nuclear-war-and-ultraviolet-radiation) and block most sunlight from reaching Earth’s surface, creating Ice Age weather conditions that would last for decades. Yet the political and military leaders who control nuclear weapons strictly avoid any direct public discussion of the consequences of nuclear war. They do so by arguing that nuclear weapons are not intended to be used, but only to deter. Remarkably, the leaders of the Nuclear Weapon States have chosen to ignore the authoritative, long-standing scientific research done by the climatologists, research that predicts virtually any nuclear war, fought with even a fraction of the operational and deployed nuclear arsenals, will leave the Earth essentially uninhabitable.