## 1

#### Interpretation---“Appropriation of outer space” by private entities refers to the exercise of exclusive control of space.

TIMOTHY JUSTIN TRAPP, JD Candidate @ UIUC Law, ’13, TAKING UP SPACE BY ANY OTHER MEANS: COMING TO TERMS WITH THE NONAPPROPRIATION ARTICLE OF THE OUTER SPACE TREATY UNIVERSITY OF ILLINOIS LAW REVIEW [Vol. 2013 No. 4]

The issues presented in relation to the nonappropriation article of the Outer Space Treaty should be clear.214 The ITU has, quite blatantly, created something akin to “property interests in outer space.”215 It allows nations to exclude others from their orbital slots, even when the nation is not currently using that slot.216 This is directly in line with at least one definition of outer-space appropriation.217 [\*\*Start Footnote 217\*\*Id. at 236 (“Appropriation of outer space, therefore, is ‘the exercise of exclusive control or exclusive use’ with a sense of permanence, which limits other nations’ access to it.”) (quoting Milton L. Smith, The Role of the ITU in the Development of Space Law, 17 ANNALS AIR & SPACE L. 157, 165 (1992)). \*\*End Footnote 217\*\*]The ITU even allows nations with unused slots to devise them to other entities, creating a market for the property rights set up by this regulation.218 In some aspects, this seems to effect exactly what those signatory nations of the Bogotá Declaration were trying to accomplish, albeit through different means.219

#### Violation---they defend restricting private asteroid mining which isn’t absolute.

#### Standards:

#### 1] Limits—their interp means that affs about any outer space activity are topical: tourism, photography, sending rovers, collecting ice cores, launching satellites, sell rocks on EBAY, etc.

#### 2] Ground—they shift the controversy from sovereign domination to minute activity. We lose neg generics are space ownership bad, space democracy bad,

#### Use competing interps – reasonability invites arbitrary britelines and judge intervention.

## 2

#### **Interp: Debaters must not defend the hypothetical implementation of an explicit actor or action**

#### Is means is Definition of is (Entry 1 of 4) present tense third-person singular of BE **dialectal present tense** first-person and third-person singular **of BE** dialectal present tense plural of BE

Webster ND Definition of IS," Merriam Webster, <https://www.merriam-webster.com/dictionary/is> IS

#### Dialectical present tense means logical coherence which implies no implementation

Your Dictionary ND, "Dialectical Meaning," No Publication, <https://www.yourdictionary.com/dialectical> Cho

The definition of dialectical is a discussion that includes logical reasoning and dialogue, or something having the sounds, vocabulary and grammar of a specific way of speaking. An example of something dialectical is a Lincoln Douglass style of debate, where both parties argue a point in a logical order. Of, or pertaining to dialectic; logically reasoned through the exchange of opposing ideas.

#### “BE” is a linking verb, not an action verb so implementation is incoherent

Grammar Monster ND "Linking Verbs," Grammar Monster, <https://www.grammar-monster.com/glossary/linking_verbs.htm> CHO

What Are Linking Verbs? (with Examples) A linking verb is used to re-identify or to describe its subject. A linking verb is called a linking verb because it links the subject to a subject complement (see graphic below). Infographic Explaining Linking Verb A linking verb tells us what the subject is, not what the subject is doing. Easy Examples of Linking Verbs In each example, the linking verb is highlighted and the subject is bold. Alan is a vampire. (Here, the subject is re-identified as a vampire.) Alan is thirsty. (Here, the subject is described as thirsty.)

A picture containing text, sign

Description automatically generated



#### Unjust means unjust adjective US /ʌnˈdʒʌst/ **not morally right; not fair**: New laws will protect employees against unjust dismissals. (Definition of unjust from the Cambridge Academic Content Dictionary © Cambridge University Press)

That’s Cambridge Dictionary ND [“Meaning of unjust in English” Cambridge Dictionary, [https://dictionary.cambridge.org/us/dictionary/english/unjust]](https://dictionary.cambridge.org/us/dictionary/english/unjust%5d)

#### Violation: They cannot defend hypothetical implementation and use the state – or they are Extra-T

#### Voter for limits and ground - imprecisely includes thousands of affs that expand appropriation and deprives us of the public regs counterplan - makes it impossible to be neg

#### Grammar - very idea of a topic rests on the assumption that words have stable meanings and relationships - precision internal link turns every piece of aff offense

#### Phil Ed – creates better ethical subjectivity and critical thinking that o/ws on uniqueness to LD.

#### TVA: Read a phil aff that affirms that private appropriation is unjust

## 3

#### Plan: Private entities ought to restrict asteroid mining involving artificial asteroid capture except for asteroid mining for the purpose of space colonization.

#### CP Competes - Asteroid Mining is being used as a tool to support Space Colonization.

Williams ’17 [Matt Williams, Writer for Universe Today. Citing A. J. Berliner, UC Berkeley; C. P. McKay. Space Sciences Division, NASA Ames Research Center; Valeriy Yakovlev, an astrophysicist and hydrogeologist from Laboratory of Water Quality in Kharkov, Ukraine. 3/10/17, “The future of space colonization – terraforming or space habitats?” [https://phys.org/news/2017-03-future-space-colonization-terraforming-habitats.html Accessed 1/2/20](https://phys.org/news/2017-03-future-space-colonization-terraforming-habitats.html%20Accessed%201/2/20) \*edited for gendered language]

In light of this, Yakolev presents what he considers to be the most likely prospects for humanity's exit to space between now and 2030. This will include the creation of the first space biospheres with artificial gravity, which will lead to key developments in terms of materials technology, life support-systems, and the robotic systems and infrastructure needed to install and service habitats in Low Earth Orbit (LEO). These habitats could be serviced thanks to the creation of robotic spacecraft that could harvest resources from nearby bodies – such as the Moon and Near-Earth Objects (NEOs). This concept would not only remove the need for planetary protections – i.e. worries about contaminating Mars' biosphere (assuming the presence of bacterial life), it would also allow human beings to become accustomed to space more gradually. As Yakovlev told Universe Today via email, the advantages to space habitats can be broken down into four points: "1. This is a universal way of mastering the infinite spaces of the Cosmos, both in the Solar System and outside it. We do not need surfaces for installing houses, but resources that robots will deliver from planets and satellites. 2. The possibility of creating a habitat as close as possible to the earth's cradle allows one to escape from the inevitable physical degradation under a different gravity. It is easier to create a protective magnetic field. "3. The transfer between worlds and sources of resources will not be a dangerous expedition, but a normal life. Is it good for sailors without their families? 4. The probability of death or degradation of [hu]mankind as a result of the global catastrophe is significantly reduced, as the colonization of the planets includes reconnaissance, delivery of goods, shuttle transport of people – and this is much longer than the construction of the biosphere in the Moon's orbit. Dr. Stephen William Hawking is right, a person does not have much time." And with space habitats in place, some very crucial research could begin, including medical and biologic research which would involve the first children born in space. It would also facilitate the development of reliable space shuttles and resource extraction technologies, which will come in handy for the settlement of other bodies – like the Moon, Mars, and even exoplanets. Ultimately, Yakolev thinks that space biospheres could also be accomplished within a reasonable timeframe – i.e. between 2030 and 2050 – which is simply not possible with terraforming. Citing the growing presence and power of the commercial space sector, Yakolev also believed a lot of the infrastructure that is necessary is already in place (or under development). "After we overcome the inertia of thinking +20 years, the experimental biosphere (like the settlement in Antarctica with watches), in 50 years the first generation of children born in the Cosmos will grow and the Earth will decrease, because it will enter the legends as a whole… As a result, terraforming will be canceled. And the subsequent conference will open the way for real exploration of the Cosmos. I'm proud to be on the same planet as Elon Reeve Musk. His missiles will be useful to lift designs for the first biosphere from the lunar factories. This is a close and direct way to conquer the Cosmos." With NASA scientists and entrepreneurs like Elon Musk and Bas Landorp looking to colonize Mars in the near future, and other commercial aerospace companies developing LEO, the size and shape of humanity's future in space is difficult to predict. Perhaps we will jointly decide on a path that takes us to the Moon, Mars, and beyond. Perhaps we will see our best efforts directed into near-Earth space. Or perhaps we will see ourselves going off in multiple directions at once. Whereas some groups will advocate creating space habitats in LEO (and later, elsewhere in the Solar System) that rely on artificial gravity and robotic spaceships mining asteroids for materials, others will focus on establishing outposts on planetary bodies, with the goal of turning them into "new Earths". Between them, we can expect that humans will begin developing a degree of "space expertise" in this century, which will certainly come in handy when we start pushing the boundaries of exploration and colonization even further.

#### Solves the Aff – AAC is defined in 1AC Neenass as “bringing into orbit” – Space Colonization is explicitly defined as orbit of non-Earth planets – solves Debris and Astro-Terror risks since they wouldn’t be in Earth orbits.

NWE No Date "Space colonization" <https://www.newworldencyclopedia.org/entry/Space_colonization> //Elmer

Space colonization (also called space settlement, space humanization, or space habitation) is the concept of permanent, autonomous (self-sufficient) human habitation of locations outside Earth. It is a major theme in science fiction, as well as a long-term goal of various national space programs.

#### AAC is the most effective and feasible method of Asteroid Mining – other methods can’t fill-in.

Sutter 21 Paul Sutter 8-20-2021 "What can we do with a captured asteroid?" <https://www.space.com/asteroid-mining-bring-space-rocks-to-earth> (an astrophysicist at SUNY Stony Brook and the Flatiron Institute in New York City. Paul received his PhD in Physics from the University of Illinois at Urbana-Champaign in 2011, and spent three years at the Paris Institute of Astrophysics, followed by a research fellowship in Trieste, Italy)//Elmer

Far, far away But the main problem with asteroids is that they are far away. Not just in space (tens of millions of miles for even the "near"-Earth asteroids), but also in speed. To launch from Earth's surface and go into orbit, a rocket needs to change its velocity from zero to 5 miles per second (8 kilometers per second). To rendezvous with an average asteroid, the rocket has to change its velocity by another 3.4 miles per second (5.5 km/s). That requires almost as much fuel as the launch itself, which the rocket would just have to carry as dead weight, thus adding to the already-obscene cost of trying to set up a remote mining operation in the first place. And once the asteroid were mined, asteroid prospectors would be faced with a difficult choice: They could try to refine the ore right there on the asteroid, which would entail setting up an entire refining facility, or ship the raw ore back to Earth, with all the waste that would involve. Bringing home the bacon So instead of trying to mine a distant asteroid, how about we bring the asteroid back to Earth? NASA's ill-fated Asteroid Redirect Mission (ARM) was an attempt to do just that. The goal of the mission was to grab a 13-foot (4 meters) boulder from a nearby asteroid and return it to cislunar space (between the orbits of Earth and the moon), where we could then study it at our leisure. To move the boulder, ARM would use solar electric propulsion, with solar panels absorbing sunlight and converting it into electricity. That electricity would, in turn, power an ion engine. It wouldn't be fast, but it would be efficient — and it would eventually get the job done. Related: How it works: NASA asteroid-capture mission in pictures Unfortunately, in 2017, NASA canceled ARM. Some of the critical technologies wound up in other projects, like the OSIRIS-REx mission to the asteroid Bennu, and NASA continues to investigate and use ion engines. When properly scaled up, a future version of ARM could potentially send large chunks of asteroids — if not entire small asteroids — into nearby outer space. In fact, a recent study found a dozen potential asteroids, ranging from 6.6 to 66 feet (2 to 20 meters) across, that could be brought into near-Earth orbit with a change in velocity of less than 1,640 feet per second (500 m/s). And the solar electric propulsion schemes cooked up for ARM would be perfectly capable of that, although it would take a while. Once an asteroid is in near-Earth space, many of the difficulties of asteroid mining are significantly reduced. Just compare the ease of getting to low Earth orbit, or even to the moon, versus reaching Mars. The Red Planet's extreme distance from Earth presents enormous logistical, engineering and technical challenges that we are still trying to solve, all while we've maintained a continuous human presence in low Earth orbit for over two decades. A cislunar asteroid would be much easier to study and much easier to test different mining strategies on. In addition, its resources would be much easier to bring back to Earth. As a bonus, any asteroid redirect mission meant for mining would also automatically become an asteroid redirect mission for saving Earth: If we can successfully change the speed and orbit of a harmless asteroid, we can potentially do it for a dangerous Earth-crossing one. The solar electric propulsion drive, for example, might be humanity's best chance to avoid calamity.

#### The Private Industry is the only avenue for Space Colonization – Governments have no incentive and are bound by I-Law.

Eure 16 (, J., 2016. Space… the final frontier. [online] Campbell Law Observer. Available at: <http://campbelllawobserver.com/space-the-final-frontier/> [Accessed 28 December 2021] Jonathan Eure is a 2017 graduate of Campbell Law School, winner of the 2017 J. Bryan Boyd Award for Excellence in Legal Journalism, and served as a senior staff writer for the Campbell Law Observer. He lived in Morganton, in the foothills of North Carolina, before moving to Raleigh for law school. He earned BA’s in Political Science and History from the University of North Carolina at Chapel Hill, graduating in 2014. The summer after his first year of law school, Jonathan worked as a legislative research intern with Representative Rob Bryan in the North Carolina General Assembly. Jonathan now interns with the Honorable Paul Newby at the North Carolina Supreme Court. Jonathan is the Secretary for the Campbell Public Interest Law Student Association (CPILSA).)-rahulpenu

Space… the final frontier With the recent discovery of a new earth-like planet, many countries are beginning serious talks about inhabiting and colonizing a planet in outer space. We very soon might turn on the news and hear stories of interstellar exploration and colonization. We might even hear about voyages of a starship named Enterprise. This probably sounds like wild speculation, or the contents of a cheesy science fiction novel. However, after a European research team announced the discovery of an earth-like planet circling the inhabitable zone of Proxima Centauri in August, 2016, we may soon see more discussions of the logistics and technology required to reach out into the stars. The part of that discussion we ultimately must address is the legal ramifications of colonization, essentially what are the laws to which nations and private individuals must adhere, when claiming portions of a new planet, moon, or asteroid. Proxima Centauri is the closest star to our own, lying a mere 4.54 light years from the Sun. In interstellar terms, that is a stone’s throw away, though clearly still an impossible journey for a civilization who has yet to visit another planet in our own Solar System. Still, Proxima Centauri’s vicinity to Earth has garnered a fair amount of interest from parties who hope to discover an inhabitable, one day reachable, planet. Guillem Anglada-Escudé led a research team of 31 scientists from eight different countries for months studying Proxima Centauri through the European Southern Observatory’s HARPS spectrograph and 3.6 meter telescope in La Silla, Chile. While investigating a tiny wobble Proxima Centauri experiences, the team discovered that the cause of the wobble is an Earthlike planet, promptly named “Proxima b.” “…overall, Proxima b is the best opportunity we have ever had for an inhabitable planet that may be reachable in the foreseeable future.” To be classified as “Earthlike,” Proxima b was studied based on likely mass, position, and orbit around Proxima Centauri, and the effects of Proxima Centauri on Proxima b. The researchers believe Proxima b has a similar mass to Earth, possibly indicating a similar, rocky makeup. Though Proxima Centauri, as a red dwarf star, releases less energy than our Sun, Proxima b is located in the so-called “goldilocks zone” of Proxima Centauri; in other words, not too hot, not too cold. Therefore, the researchers believe the basic elements for human life, heat, oxygen, and water could exist on Proxima b. There is some concern that the amount of solar radiation expelled by Proxima Centauri could make Proxima b uninhabitable, but overall, Proxima b is the best opportunity we have ever had for an inhabitable planet that may be reachable in the foreseeable future. “A ratified treaty is then given the full force of domestic law in the U.S., and the U.S. government would generally be bound to uphold the tenets of that treaty. Being bound to a treaty in this case means the U.S. could not claim any portion of Proxima b as U.S. property.” Obviously we have to get there first, and at this very moment, some of the most brilliant minds on Earth are attempting to develop interstellar travel. Ideas such as asteroid mining and economic incentives of resources available in space are already pushing us toward the day when we might visit another planet. Once we do, our current legal framework may make colonization difficult, at least on a national level. The best starting place for understanding space law is the “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies,” better known as the “Outer Space Treaty.” Signed in 1967 by the member nations of the UN, including space race powerhouses the U.S. and U.S.S.R., the Outer Space Treaty created a series of broad principles controlling the manner in which nations would explore space. These principles include provisions that exploration is permitted in all states, that no celestial bodies may be appropriated by individual states, that nations take responsibility for the environments of space and celestial bodies, and that non-governmental space activities must be authorized and continually supervised by the states which have jurisdiction over such activities. In order to have ratified such a treaty in the U.S., the President would have sent the treaty to Congress for their “advice and consent,” and the treaty would have to be approved by a two-thirds majority. The treaty would then be sent back to the President to be ratified, as described in Article II, Section 2 of the U.S. Constitution. A ratified treaty is then given the full force of domestic law in the U.S., and the U.S. government would generally be bound to uphold the tenets of that treaty. Being bound to a treaty in this case means the U.S. could not claim any portion of Proxima b as U.S. property. Fortunately, this is also true for Russia and China, the U.S.’s primary competitors in space, and none of these nations can violate the treaty without risking adverse reactions from the others. The Outer Space Treaty is the only one of the U.N.’s treaties on outer space to which the U.S. or any other major space-faring nation belongs, and is therefore the only treaty that really matters, though the U.N. has passed other resolutions on the issue. “**Private** **exploration** of space **becomes** **more** of a **reality** each day, with private corporations such as SpaceX, Blue Origin, and Virgin Galactic testing **new** **platforms** for space travel.” As a policy matter, though the **O**uter **S**pace **T**reaty uses lofty ideals to **bind** **nations** into mutual respect and perhaps even unity of purpose, focusing solely on those ideals discounts a key ingredient of the original space race. Promulgation of national ideology was the original motivator of the space race between the U.S. and the U.S.S.R. Without national ideology, prestige, or power as a motivating factor, there is really **no** **incentive** **for** the **governments** of major spacefaring nations **to** **spend** massive amounts of money over long periods of time **on** such risky endeavors as space **colonization**. For this reason, the **colonization** of Proxima b would more likely **fall** **to** private **corporations** with much to gain from the resources other worlds might offer. Private exploration of space becomes more of a reality each day, with private corporations such as SpaceX, Blue Origin, and Virgin Galactic testing new platforms for space travel. A **movement** has **grown** **up** **alongside** these private spacefaring **companies** **claiming** planets such as Proxima b might become a **new** **frontier**, where private citizens can stake their own personal claims. This movement has even **proposed** **legislation** in Congress. The “Space Settlement Prize Act,” which would **ultimately** **guarantee** that **any** **settlement** built privately on other planets, moons, asteroids, etc., would be **owned** **by** the private citizens or **corporations** **who** **claim** **them**. This act would likely function similarly to the Homestead Acts, which allowed settlers who worked unclaimed land, to buy that land at very little cost. Furthermore, these groups claim that they are **not** **subject** **to** the **O**uter **S**pace **T**reaty, as the treaty’s provisions only govern nations. “The language of the Outer Space Treaty does not forbid private claims on and settlement of celestial bodies, only national appropriations. Furthermore, nations themselves are answerable in case of any environmental damages.” It is an interesting theory, and these 21st century frontiersmen and women might be correct. The Outer Space Treaty does not only govern nations themselves, but national oversight of non-governmental organizations as well. As all private attempts at space colonization on Proxima b and any other celestial body would be through corporate entities. These corporate entities would certainly fall under the national mandate to authorize and continually supervise the operation of such groups. But just because governments must have some form of oversight in place to manage private space exploration corporations, does not mean there is a mandate to control the legal operation of such corporations. The language of the Outer Space Treaty does not forbid private claims on and settlement of celestial bodies, only national appropriations. Furthermore, nations themselves are answerable in case of any environmental damages. Nations can certainly pass laws regulating the actions of private corporations consistent with the Outer Space Treaty’s mandate, and in fact the U.S. is already considering and attempting to create policies governing private space craft and travel. The problem is that none of this law has become official yet. The reality behind this entire discussion is that it will not become truly important until either nations or private corporations prove they can travel to another planet. Until then, the laws of space colonization are nothing more than an academic exercise. However, they have been proven important in one sense: protection of our moon. Prohibitions on national appropriation, military use, or exploitation have certainly been effective in keeping the moon unmolested (though technological and financial constraints also played a major role). So perhaps there is a reasonable groundwork for the future laws of space colonization. Proxima b may not be the first place they are exercised, but the discovery of a relatively nearby Earthlike planet is sure to hasten the need for such laws to be in place before we land. The law now needs to boldly go where no law has gone before.

#### Concede that Mining democratizes AAC tech – that’s necessary for Space Colonization to occur.

NASA 14 National Aeronautics and Space Administration 6-27-2014 “How Will NASA's Asteroid Redirect Mission Help Humans Reach Mars?” <https://www.nasa.gov/content/how-will-nasas-asteroid-redirect-mission-help-humans-reach-mars/> //Elmer

Trajectory and Navigation As we learn to maneuver a large mass like an asteroid using low-thrust propulsion and the gravity fields of Earth and the moon, we’ll prove valuable technologies for the future Mars missions. Human missions to Mars will require far more cargo at a long distance from Earth—much greater than the amount of cargo we currently send to the space station, which takes about one to three days to arrive. The ARM mission will help perfect techniques for sending those large masses to Mars by requiring a precise set of maneuvers to intercept the asteroid at a distance with large time delays. Reaching the Earth-moon system also requires precision very similar to that required for Mars orbit. Very careful power balancing and attitude control will be required to execute this portion of the ARM mission, which will parallel the work needed to pre-position cargo at Mars. Additionally, the crewed mission aboard Orion to the asteroid in cis-lunar space calls for a complex set of maneuvers to rendezvous and dock with the robotic spacecraft. Both the out-bound legs and in-bound legs of the journey require a critical lunar gravity assist burn, which is executed about 62 miles (100 km) above the lunar surface. The insertion and departure from the distant retrograde orbit also require very precise maneuvers that are comparable to the Mars orbit insertion and Mars departure burns.

#### Earth is dying

Arora 19 (Naveen Kumar Arora, Professor in the Department of Environmental Science, Ex-Head Department of Env. Microbiology, Babasaheb Bhimrao Ambedkar University.)(“Earth: 50 years challenge”, Environmental Sustainability, March 2019, Volume 2, [Issue 1](https://link.springer.com/journal/42398/2/1/page/1), pp 1–3)//ASMITH

The life of earth is estimated to be 4.54 billion years with an error range of 50 million years. Life appeared on earth around 3.5 billion years ago. Around 200,000 years ago, Homo sapiens evolved and started the great civilizations on the planet. Study suggests that human population is only 0.01% of all the life forms on Earth. This shows how existence of humans is just a miniscule part if we compare it with the existence of our planet or of the presence of life on earth. But if we go through the events particularly in last 10,000 years (of recorded history of mankind), it becomes clear that the presence of humans on earth brought several changes in both the biological and non-biological components. Most of the striking changes have appeared in last 50 years or so. According to reports, humans have destroyed about 83% of wild mammals and half the species of plants till date. On the whole, humans have consumed 30% of the known resources resulting into scarcer ecosystem services for future generations. If these trends continue, the Earth will soon be experiencing mass extinctions and we will be left with an even more degraded planet. Humans in last 50 years, because of ever-increasing population associated with pollution and destruction of natural ecosystems have completely changed the face of the Earth. The exponential increase in human population in last few decades brought about many drastic changes on Earth making it look much degraded and bruised. One such phenomenon is Earth’s present carbon dioxide (a potent green house gas) level in the atmosphere which has exceeded 411 parts per million (ppm), much higher as compared to about 323 ppm about 50 years ago, resulting in major environmental issues such as global warming and climate change. According to the Fifth Assessment Report of Intergovernmental Panel on Climate Change, anthropogenic activities have been described as the main cause of increased green house gases level, of which 2/3rd come from burning of fossil fuels and 1/3rd is from land use changes. The increased clearing of forests and vegetated lands, due to overgrazing and industrial transformation, in the 1970s showed disturbed albedo and evapotranspiration leading to warming of earth, change in carbon cycle and global catastrophic events of biodiversity extinction. NASA’s Goddard Institute for Space Studies (GISS) analyzed that the average global temperature of earth has increased by about 0.8 °C since 1880 and two-thirds of this warming has been reported since 1975. The nexus of responses and catastrophic events also point towards the accelerated rate of melting of glaciers with the loss of 226 gigatons/year of ice between 1971 and 2009. The highest impacted glacier loss was reported from Greenland Ice Sheet (about sixfold higher) and Antarctic ice (almost quadrupled) in merely 20 years. Correspondingly, the sea level rise has almost doubled in last 20 years, with increment being 3.1 mm/year since 1993. Chemical and pesticide pollution is another menace to the ecosystems. According to reports, more than 1,40,000 chemicals including pesticides, plastics, etc. have been synthesized till date since 1950 and each year 10 millions tons of toxic compounds are being dumped into the environment leading to land degradation, soil salinization and contamination of water resources. This has resulted in the problem of safe drinking water around the globe. As per reports of CNN, about 500 million tons of heavy metals, toxic sludge and hazardous solvents were estimated to be released in global water supply in 2007 making it unsafe to consume. Plastic pollution is also a big nuisance caused by humans on Earth. The stats show that annual production of plastics during 1970s was about 50 million metric tons and it has increased to over 348 million metric tons at present. In terms of biodiversity losses, WWF’s Living Planet Report highlights that humans have eradicated 60% of the Earth’s wildlife in less than 50 years. About 20% of Amazon forests are lost in the last half century. A recent study revealed that of total global tree cover loss between 2001 and 2015, 27% depreciation came from commodity driven deforestation i.e. conversion of forests permanently in order to expand commodities such as meat, minerals, oils and gas. Other drivers are forestry i.e. loss within the managed forests or tree plantations (26%), shifting agricultural practices (24%), wildfires (23%), and urbanization (0.6%). Half of the shallow-water corals have also been leached out by anthropogenic activities polluting the oceans and seas in last 30 years. The recent analysis shows that the population of freshwater animals has plummeted by 75% since 1970s. Reports say that the damage done is so rapid that even if we end it now, it will take centuries to replenish the natural world. The global human footprints over the past 50 years are so dominating that even the view of the planet from space shows the modification of various critical ecosystems and the demography. The complementing series of aerial pictures taken through satellites show that many hotspot ecosystems and areas have been tremendously degraded. Focusing on what all we have lost over the past half century, the red list is so long that it cannot be confined in few pages. The Great Barrier Reef visible even from space has shown 50% loss due to severe bleaching by increased temperature of the oceans in just 30 years and is predicted that up to 90% may die within next century. Shrinking of the Dead Sea has shown an alarming rate of around four feet a year and the sea has already lost one-third of its surface area. The increasing temperature has caused high rate of snow melting in the European mountain range The Alps, and the most unsettling event reported in 2017 was that the winter season was 38 days shorter in comparison to that in 1960. The human oriented massive irrigation project over past 50 years has shrunk the fourth largest lake Aral Sea, to only 10% and it will soon be a thing of the past. NASA’s monitoring of Arctic Sea ice since 1978 have detected a steep decline in overall ice content. The polar ice thawing stories over the past half centuries have been highly alarming and Antarctic alone has lost 40 billion tons of ice each year from 1979 to 1989 and this trend rose to 252 billion tons per year in 2009 and today Antarctic has already lost 6 times the ice it had 40 years ago. The ‘Third Pole’ i.e. The Himalayan- Hindu Kush mountain range and the Tibetan Plateau in Central Asia is also impacted by the negative trends of global warming and in the past 50 years this remote region has lost 509 glaciers resulting in the local temperature rise by 1.5 °C. Recently in 2018, a huge chunk of ice in Helheim Glacier in Greenland, about the size of Manhattan, with 10 billion tons of ice, split out and tumbled into sea; this loss was indicated as the most disturbing irreversible loss. The record breaking heat waves in Australia and Europe are already the hard and fast evidences to how much humans have changed the face of Earth. Australia witnessed the hottest summer in the recorded history in the year 2018–2019. The high melting of glaciers and warming of the poles led to the extreme freezing of Chicago, which became colder than Mount Everest, Siberia and the poles. The summers in Iran shockingly changed the size and color of Lake Urmia from green to brown due to blooming of algae and bacteria. Similarly, there are numerous reports which show the decline of fertile lands, increased soil salinity, loss of forests and so on, clearly visible by the satellite images. A team of researchers’ from several countries including Sweden, Australia, Denmark, USA, England, Canada, Germany and Holland declared climate change and biodiversity loss as the “core boundaries” which if breached can transform Earth to inhabitable state. Stephen Hawking in his recently published book “Brief Answers to the Big Questions” stated that the biggest threat to mankind on Earth is the human induced climate change. Although the technology has advanced at an unprecedented rate and this has improved the living standards a lot but the cost of this development in terms of damage to the planet as a whole is also extraordinary. We share the planet with millions of other species but have almost single handedly exploited it to the extent that every specie is affected one way or the other. The industrial, agricultural and the infrastructural revolution have resulted in over exploitation of resources and pollution of every nook and corner of the planet. The technologies which were developed to adorn and ease our routines has brought antonymic effect threatening the survival and has made it very clear that no human science can replace “nature’s perfect systems” which have been carving the environment and ecosystems of earth to balance it in the zone of habitability.

#### Space colonization is key to ensure human survival – pursuing it as soon as possible is crucial

Kovic 18 (Marko Kovic, co-founder and president of the thinktank [ZIPAR](https://kovic.ch/zipar/), the Zurich Institute of Public Affairs Research. He is also co-founder and CEO of the consulting firm [ars cognitionis](https://kovic.ch/consulting-ars-cognitionis/),. He has a PhD in political communication, University of Zurich.)(“Why space colonization is so important”, Nov 10, 2018, https://medium.com/@marko\_kovic/space-colonization-why-nothing-else-matters-a877723f77d4)//ASMITH

Should humankind exist in the future? Should the future existence of humankind be as good as possible in as many ways as possible? If your answer to these two questions is Yes, then there is a topic that you should care about a lot: Space colonization. Why, you might wonder, does space colonization matter, possibly more than anything else, as the title of this article claims? Because the future of humankind directly and completely dependent on whether and how we manage to colonize space. Space colonization is a double-edged sword. On one hand, the creation of permanent and self-sustainable human habitats beyond Earth is unavoidable if humankind is to exist in the long-term future. On the other hand, however, space colonization could bring about a catastrophically bad future if we colonize space in a bad way. That future that might be worse than one in which humankind does not exist. Space or bust: Why we must reach for the stars Why should we pursue space colonization in the first place? Don’t we have more pressing problems today, on Earth? Yes, we do have many problems on Earth today, and we should try to solve them. But space colonization is just that: A strategy for dealing with certain problems. An the problems that space colonization would be dealing with are, arguably, among the greatest problems of them all: Existential risks; risks that might lead to the extinction of humankind [1]. Currently, all of our proverbial existential eggs are in the same basket. If a natural existential risk strikes (for example, a large asteroid colliding with Earth) or if a man-made existential risk results in a catastrophic outcome (for example, runaway global warming [2, 3]), all of humankind is at risk because humankind is currently limited to planet Earth. If, however, there are self-sustainable human habitats beyond Earth, then the probability of an irreversibly catastrophic outcome for all of humankind is drastically reduced. Investing in space colonization today could therefore have immense future benefits. Using resources today in order to make space colonization possible in the medium-term future is not a waste, but a very profitable investment. If humankind stays limited to Earth and if we go extinct as a consequence of doing so, then we will all the billions of life years and billions of humans who might have come to exist — and who would have experienced happiness and contributed to humankind’s continued epistemic and moral progress. Taking space colonization more seriously today does not, of course, mean that we should only pursue space colonization and ignore everything else that is bad in the world. We should continue dealing with current global problems and, at the same time, invest greater resources into space colonization. At this point in our history and our technological development, even modest amounts of resources directed at space colonization would go a long way, such as public funding of basic research. Additionally, it is very likely that technological advances in the domain of space colonization would improve our lives in other ways as well thanks to technology transfer [4] — investing in space colonization today would probably be a win-win situation.

## 4

#### Outer space isn’t value neutral but has always been a question of militarization – debates between civilian and military use are two sides of the same coin that affectively polices society, culminating in total war.

Craven 19 [Brackets Original. Matt Craven (Professor of International Law, SOAS University of London, United Kingdom). “‘Other Spaces’: Constructing the Legal Architecture of a Cold War Commons and the Scientific-Technical Imaginary of Outer Space”. European Journal of International Law, Volume 30, Issue 2, May 2019, Pages 547–572, Accessed 1/12/22. <https://academic.oup.com/ejil/article/30/2/547/5536739> //Xu]

There was little doubt to any of the observers of the launch of Sputniks I and II in 1957 that, despite their overtly ‘scientific’ purposes, the arms race had taken a decisive new turn. The exploration of outer space clearly offered a range of potential benefits; alongside the possibility of research into the physics of the atmosphere, it also would facilitate the collection of a host of meteorological, geophysical and cartographic data, enable enhanced capacity for radio communication and television broadcasting, facilitate safe navigation and, finally, open up the possibility of experimental flights to the moon and beyond. No one, however, was blind to the military implications.60 Within the USA, in particular, there was a widespread belief that command over outer space was an imperative that could not be missed: ‘[W]hoever controls outer space’, it was often said, ‘controls the world’.61 In the wilder speculations, thus, it was imagined that a nuclear power might be in a position to launch guided missiles from a space platform to any point on earth with barely any possibility of response, that outer space would be filled with ‘orbiting bombers’ or that the moon would become the site of military rocket installations. ‘Control’ of outer space, thus, was immediately conceived as being vital as a matter of security. Such concerns seemed to place a premium upon ensuring that the ‘use’ of outer space was exclusively peaceful – a view that seemed to be affirmed not merely by the establishment of COPUOS and successive proposals put to the UN by both the USA and Soviet Union. It was also recognized in the US National Aeronautics and Space Act of 1958, which created a civilian space agency (NASA) and declared, in the process, that ‘it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind’.62 This theme was carried through into the code for outer space – UN General Assembly Resolution 1962 recognizing ‘the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes’ and the Outer Space Treaty that added in Article 4 that states should not place nuclear weapons or weapons of mass destruction in orbit and that the moon and other celestial bodies shall be used by all states parties ‘exclusively for peaceful purposes’ (military bases and fortifications, in particular, being prohibited). Indeed, President Lyndon B. Johnson described the Outer Space Treaty as ‘the most important arms-control development since the limited test-ban treaty of 1963’.63 In an immediate sense, then, outer space was configured as a space radically distinct from atmospheric space and was placed at once beyond the field of both sovereignty and of war. These, however, were by no means co-terminous. The preferred analogy when discussing the status of outer space was often that of the high seas – like the seas, outer space should be marked by the principle of freedom of access and movement, a res communis incapable of being ‘enclosed’. In fact, this was the analogy used by the USA when defending its use of satellites for reconnaissance purposes; ‘reconnaissance’ from space, it was argued, was the functional equivalent of surveillance from the high seas.64 It is clear, however, that this analogy was problematic precisely because the high seas themselves were not immune from being brought within the field of military conflict.65 And, with that in mind, alternative modes of analysis were often proffered to ensure that the ‘commons’ was not to be equated with a potential field of battle.66 Nevertheless, there was always a certain equivocation running through discussions within the UN and elsewhere as to whether the military/non-military distinction was one that could be effectively held in place. Not only were the Declaration on Outer Space and Outer Space Treaty silent on certain vital matters – on the equipping of satellites, for example, with conventional weaponry or the militarization of the ‘extracelestial void’ – but the inclusion of Article 3, which instructed states to ‘carry on activities’ in accordance with international law and the UN Charter ‘in the interest of maintaining international peace and security’, gave expression to the idea, vaunted at various moments, that outer space may nevertheless be the site of military action in self-defence.67 ‘Peaceful’ use, on such a measure, was not to be calibrated by reference to the equipment or personnel put into space – whether military or civilian – but, rather, by reference to the ends or motivation of the actors in question.68 In the case of the USA, this was to resolve itself in the idea that ‘peaceful use’ should not be equated with ‘non-military use’ but, instead, with ‘non-aggressive’ use. As Senator Albert Gore was to put it, when speaking before the UN First Committee in 1962: [i]t is the view of the United States that outer space should be used only for peaceful – that is, non-aggressive and beneficial – purposes. The question of military activities in space cannot be divorced from the question of military activities on earth. To banish these activities in both environments we must continue our efforts for general and complete disarmament with adequate safeguards. Until this is achieved, the test of any space activities must not be whether it is military or non-military, but whether or not it is consistent with the United Nations Charter and other obligations of law.69 The same general tenor was maintained in the discussion over Article 4 of the Outer Space Treaty concerning the demilitarization of the moon and celestial bodies. In this treaty, it was admitted that the use of military personnel ‘for scientific research or other peaceful purposes shall not be prohibited’, largely in recognition of the fact that for both space powers it was the military, not civilian agencies, who were responsible for developing rocket and other outer space capabilities. What one might see in this is a straightforward determination, on the part of both space powers, to continue the practice of exploiting outer space for purposes of defence whilst holding on, at the same time, to the general idea that outer space was a space of peaceful endeavour. Defensive militarization, here, was to be conceptualized as the functional equivalent of total demilitarization. Yet ‘defence’ was also an unstable category in circumstances of a bipolar military standoff that depended upon a balance of forces. For not only might an effective defence depend upon first strike capability (as the doctrine of ‘mutually assured destruction’ was to suggest),70 but also, as was later to become evident following the announcement of the US Strategic Defense Initiative in 1983,71 even the construction of an overtly ‘defensive’ system could assume an offensive cast if only one party possessed that capacity.72 There was, however, also a much deeper problematic at work here, which related to the persistence of a governmental rationality that was held over from the earlier decades of the 20th century, that understood the necessity of bringing all social resources – economic, technical, scientific and human – to bear in defence of the state against an existential threat. This was articulated in the interwar years in the theories of total war developed by the likes of Erich Ludendorff73 and Ernst Jünger,74 but was carried forward, well into the aftermath of World War II.75 Even if, at Nuremberg, the tribunal had associated the practice of total war with the pathologies of National Socialism,76 as the likes of Georg Schwarzenberger and Josef Kunz were to observe, it was a method of waging war that was only, in small part, to be associated with the problem of totalitarianism. For both, the phenomenon of total warfare was a much more general one – associated with technological developments in arms, indiscriminate modes of warfare and the mobilization of the civilian population – and was as much in play in the 1950s as it had been in earlier decades.77 If the prospect of nuclear annihilation meant that no element of society would be spared, so also, it seemed to follow, no element of society should be excluded from preparations to ward off that eventuality. Whilst, in the case of the Soviet Union, the ethos of centralized planning and a party bureaucracy equipped with an ideology of collective ownership and class warfare naturally dissolved any operative distinctions between the civil and the military establishment,78 the same was also apparent in the USA where, as was recognized as early as 1945, the ongoing development of new technologies of offence and defence, in conditions of competition, would require ‘the participation of every element of the civilian population’ and, in particular, the enlistment of the countries research capabilities.79 Alongside the development of what Dwight Eisenhower later described as a ‘military-industrial complex’, guided by a ‘scientific-technological elite’,80 the rationalities of the Cold War were to envelop US society in a much more profound way – from the mobilization of the media in defence of free thought, the enlistment of corporations, unions and research establishments in defence of national security and the co-option of cultural institutions (from Hollywood to the universities81) in the affective management and policing of public life.82 The significance of this in the context of outer space was the almost total loss of any way to distinguish effectively between military and civilian activities. Just as the requirements of resourcing a technologically dependent military armature increasingly depended upon a civilian infrastructure of research, industry and economic management,83 so also was it clear that prospective civilian and scientific activities in space (such as meteorology, remote sensing, navigation systems and telecommunications) all had military dimensions. If, for example, developments in meteorological knowledge and environmental science seemed to open up the possibility of weather control for the purposes of combating drought, improving agriculture or the avoidance of natural disasters, so also could that same science assist in the development of military communications and ballistic missile capability (which depended upon information about the lower and upper atmosphere, ionospheric behaviour, geodesy and geomagnetism).84 Such knowledge also opened up new possibilities for manipulating weather systems in order to procure military advantage (such as the manipulation of thunderstorms to disable communication systems or the creation of fog or cloud).85 But it was not just about scientific knowledge enabling new avenues of military innovation; it was also about the purposes to which the same technology might be put. Thus, for example, the camera-equipped satellite programmes (Tiros, CORONA), with the auxiliary systems of information recovery and reproduction, were virtually identical (give or take a few degrees of resolution) whether they were used for the purposes of geodetic measurement and weather prediction or military reconnaissance. In some cases, furthermore – such as the US Galactic Radiation Background satellite – intelligence-gathering electronics was incorporated within the same instrument used for the measurement of solar radiation.86

#### The 1AC is a misdiagnosis of debris – wargames and coverups whitewashes militarism’s recreation of debris.

Reno 20 [Joshua O. Reno (Associate Professor of Anthropology at Binghamton University). February 2020. Accessed 1/15/22. “Military Waste: The Unexpected Consequences of Permanent War Readiness”. UC Press. <https://www.ucpress.edu/book/9780520316027/military-waste> //Xu]

As I write this, in the atmosphere miles above me, hundreds of millions of tiny artificial particles and larger fragments are circling the planet, mostly undetected, moving as fast as speeding bullets. This is orbital space debris—artificial objects and materials launched into orbit that no longer serve a purpose—and it has been accumulating in the sixty years since the Soviet Union sent Sputnik into space and transformed the stakes of the Cold War. In this chapter, I review various attempts to witness and revalue space debris, which expose the historical and ongoing militarization of outer space. At first glance, space debris would seem very different from the other objects discussed in this book. On the one hand, they are not as clearly linked to the military and permanent war preparation, because this connection has been actively foreclosed from public awareness by the US security state. Every space mission creates some debris, and many space missions had covert and classified goals that were not disclosed until later, and some never were. One famous example is the cover story used to account for the U2 incident in 1960. Shot down while conducting covert surveillance of suspected Russian ICBM development from Soviet airspace, the U2 spy plane was initially characterized as a NASA weather vessel. However, two days after the cover story was released, a photo was wired to the US government of Khrushchev holding aerial photographs the U2 had taken, proving the NASA story was a lie.1 If one problem with examining space debris as military waste is a history of secrecy, another concerns the undetectability immanent to space debris as a material object. It is one thing to write with authority about orbital space debris. It is quite another to bear witness to space debris, as one can other forms of American military waste. “To witness,” Michael Taussig writes, “as opposed to see, is to be implicated in a process of judgement. . .such that the mere act of seeing tilts the cosmos and deranges the eyeball” (2011, 71). Yet, with this most cosmic of wastes, witnessing is hard to come by. I cannot swear that I have seen orbital space debris (in orbit, that is) and haven’t met many who can. Amateur astronomers sometimes think they have seen space debris, but do not know for certain if they ever will again or if they’ll even know when they do. And, more importantly, they probably will not care if they do. If this book is about finding people who bear witness to military waste, who not only see it but become invested in this act of perception, then in that sense at least this chapter is premised on a failure. Those I spent the most time with—amateur astronomers and a ham radio operator in the Southern Tier of New York—were not already interested or invested in space debris. I did not trace a preexisting network linking nonhumans with humans (Latour 2005). I did not locate a public affected by an act of contamination, slow violence, or environmental injustice (Marres 2012). That is to say, with few exceptions, I did not succeed in finding a group for whom this object matters and using their interest to direct my own. Instead, I found a problematic object and tried to recruit people who might care to do so. One reason space debris is not very interesting for the people I got to know is that anything so labeled is uninteresting almost by definition. Space debris is perhaps the truest expression of what Mary Douglas (1966) meant when she labeled dirt, “matter out of place.” Almost anything can be considered space debris if it was launched into orbit and people think it should not be there anymore. It may refer to satellites that have aged and become obsolete or can no longer be contacted or controlled from the ground, thus rendering them useless. Space debris also consists of materials of varying size and substance that were purposely released or jettisoned by vessels and satellites to facilitate their ascent or as part of their ongoing maintenance. But whether something counts as space debris depends on who is making this judgment and how. Part of the reason that amateur astronomers might not care about space debris is that anything they do care about may no longer be recognized as debris. Consider NASA’s Cassini probe, which entered Saturn’s atmosphere after completing its twenty-year mission on September 15, 2017. I began hearing about Cassini’s final descent weeks earlier from the members of the Kopernik Astronomical Society (KAS). Cassini was being discarded, but it was difficult to find anyone characterizing it as debris. In early September, KAS members were still sharing their best photographs of the solar eclipse that had captivated the country in August. But soon they began posting links on the group’s public Facebook page related to Cassini’s last mission: September 14: #Live #Coverage: NASA Monitors #Cassini’s #Dive Into #Saturn Friday morning, NASA & #JPL will monitor the Cassini #Spacecraft as it ends its #mission by diving into the #clouds of Saturn. #NASATV and NASA & JPL #Internet #web-sites will provide live #steaming coverage as #scientists #monitor Cassini’s “#GrandFinale,” as well as #news#conferences before (Thursday afternoon) & after (Friday morning) the #event. September 16: A fantastic overview of the Cassini Mission, including it’s [sic] very last image. Such an amazing mission just to tease our wonder a little bit.#FarewellCassini Explore More! September 20: NOVA: Death Dive to Saturn These posts provided hashtags and links one could use to learn about Cassini’s final mission, witness live broadcasts, and honor the lost spacecraft. Cassini was singled out for so much praise by astronomy enthusiasts for good reason. Many knew it had been responsible for some of the best pictures of the solar system ever captured. As a writer for a science and technology website put it: While many uncrewed spacecraft have done an incredible job of revealing our solar neighborhood to us, honestly, none did it better than NASA’s Cassini probe. After exploring Saturn for 13 years, on September 15th at 4:55am PDT, the probe will plunge itself into the planet’s atmosphere, becoming one with the very object of its fascination. (Paoletta 2017) As in many examples that appeared around this time, on- and offline, this writer treats Cassini like a person. It is as if the probe itself were intentionally doing the “exploring,” plunging “itself,” and intentionally merging with “the very object of its fascination.” Such eulogistic prose could be found among many techno-science and astronomy feeds and sites at the time. Consequently, what otherwise might have been seen as just an expensive, floating camera became instead a subject of interest akin to Saturn itself. But objects never mean just one thing, even within the same community of practitioners.2 From another point of view, the disposal of Cassini on Saturn was more like an act of cosmic littering disguised as a funeral. One small but vocal group of Cassini-truthers claimed that there was another, more nefarious purpose behind the destruction of the probe. NASA was, they claimed, trying to accomplish its decade-old goal of creating another sun by detonating a nuclear payload on Saturn. Known as “Project Lucifer,” such a claim had been made before in relation to other space missions. But for every so-called conspiracy theory, there are even more people who delight in debunking and deconstructing them. A decade before Cassini’s final dive, an author for the online publication Universe Today had already set about deconstructing Project Lucifer’s assertions (see O’Neill 2008). It is worth noting, however, that claims and counterclaims such as these, much like narratives of UFO sightings and abductions, are about more than what “really happened.” They are more centrally concerned with whether or not hidden powers are operating in the shadows, just beneath awareness. If they exist, such powers are only visible in momentary glimpses and if one looks carefully enough to see the pattern.3 Whether Cassini is seen as a mournful loss or a frightening conspiracy, it is still not quite “debris” since it has greater purpose than something merely drifting, colliding, orbiting. In other words, whether something counts as debris depends on how astronomical observers (and conspiracists) think about and act towards the things that populate outer space. More than just claims to debunk, conspiracy theories like Project Lucifer raise ethical and political questions surrounding what is otherwise accepted as relatively innocent and harmless civilian science. More to the point, they point toward forgotten and troublesome understories associated with the exploration and exploitation of outer space. It is not so strange to suspect that NASA is concealing the true motivations behind its projects, as it has done in the past and as its less-wellknown sister agency, the National Reconnaissance Office (NRO), has done for the entirety of its existence. Fantasies of hidden nuclear reactions on Saturn are not just conspiratorial paranoia, therefore, but manifestations of a general mistrust around state secrets concerning the militarization of space, which did not end with the Cold War. This chapter explores space debris as openended rubbish (Thompson [1979] 2017) and as an object of militarized fantasies, past and present. The example of Cassini is telling because it represents a situation where what might otherwise be thought of as mere space debris is instead revalued as a sign of discovery and scientific achievement or, alternately, of conspiratorial, cosmic destruction. The intentional generation of space debris becomes more apparent by linking it with the historical and ongoing militarization of space. My argument is not that the US military is directly responsible for all space debris (a claim thatwould be difficult to definitively prove in any case). That being said, antisatellite weapons testing has by all accounts made the problem of space debris worse; furthermore, defense agencies have been at the forefront of studying and proposing solutions to space debris.4 In this chapter, I link both the historical and ongoing creation of space debris, as a problem, and current proposals to solve it to a common source: a tendency to imagine expert knowledge and technical practice as a form of mastery, despite the fact that they lead to new and unanticipated accidents and risks. Here I draw from the Aristotelian argument of Paul Virilio (2007, 5) that the accident reveals the substance. In other words, the invention of any substance is equally the invention of any of its accidental manifestations. The shipwreck is the invention of the ship (see chapter 3) just as the Chernobyl meltdown is the invention of the nuclear power station. So, too, space debris is the invention of the Cold War space race, an invention distinctly different from the way planets ordinarily shed and reabsorb materials. Clearly, orbital space debris is very different from things like planes, ships, and guns. Yet, it is productive to think of all forms of military waste not only as different kinds of things, but as associated with different microworlds of action connected with permanent war preparation. For this reason all of these forms, as rubbish, have elements of indeterminacy associated with them, which lead to disputes about their social and material potential. After all, what is difficult to represent clearly can be even more disturbing to imagine, since this usually makes it harder to control and predict.5 Is space debris polluted and polluting or valuable and meaningful? Is it raw material for a radical new vision or heritage that should be preserved? When objects are simultaneously rare and abundant like space debris, hard to relate to, yet ubiquitous in orbital environments, these questions pose even greater challenges. Acknowledging the militaristic origins of space debris does not make it more accessible or amenable to reuse and rethinking by civilians. As I will explain, even astronomers might only encounter space debris fleetingly, and only for a brief moment as it quickly vanishes out of sight. In some ways, this makes space debris both less visible and more threatening than the other forms of military waste I discuss in this book. When it comes to astronomical phenomena, seeing is believing. But believing is also seeing, insofar as imagined evidence of aliens or government conspiracy involves prior and ongoing attunement toward that which lies concealed beyond familiar experience and official explanation. The idea of cultivating ethical attunement of the senses, especially to listen for signs of otherworldly beings and designs, has been dis-cussed for religious subjects (Luhrmann and Morgain 2012; Hirschkind 2015; Zani 2019). I extend this to include visual attunement of lay astronomers. Astronomical attunement can involve searches for alien life, but it can also be more modest in its scope, associated with wise use of and participation in the Earth’s orbital environment. I was unsuccessful finding many people who already cared about space debris, but getting to know them I came to see their practices of attunement as an alternative to the dominant strategies to address space debris. Unlike the attunement of amateurs, space agencies represent space debris as a problem to address through techno-solutionism. This is a way of valuing the technical fix as an end in itself, and it is deeply connected to the militarization of space and the problem of space debris. the color out of space Space debris comes in the form of subsidiary materials intentionally or inadvertently discarded after helping satellites escape Earth’s gravity, as well as the satellites themselves. Some of these objects are broken down by interactions with other bits of debris and physical processes while in orbit, but may continue orbiting the Earth all the same. There are good records of the over six thousand satellites that have been launched since 1957. But they can be difficult to locate and identify from the ground all the same. Depending on the altitude, lost and disused satellites and their accompanying materials either circle the planet at low Earth orbit (LEO), medium Earth orbit (MEO), or geostationary orbit (GEO), and this also affects their relative velocity, with objects further away moving more slowly. The ISS is located about 250 miles above the surface of the Earth in LEO and moves about 17,500 miles per hour, whereas satellites in GEO are located about a hundred times further above the Earth and travel at less than half that velocity. The difference is that disused space junk has lost attitude control, meaning that its orientation becomes more haphazard as it tumbles through space.6 As different forms of space debris move, sometimes at tens of thousands of miles per hour, they occasionally collide with one another and splinter into additional, smaller fragments. There are an estimated half a million pieces today, a fraction of which can be tracked by space agencies like NASA. Using the publicized data from the DoD’s Space Surveillance Network, there have been numerous models generated to display the problem of space debris as it has accumulated over time. One of the problems with depicting space debris accurately has to do with the conditions of orbital environments. In time-lapse videos, one can visualize the Earth as if it were sloughing off dandruff—hundreds of thousands of tiny flecks that encircle it at various distances. This metaphor is actually more appropriate than it might seem. Like an animal’s scalp, the Earth routinely sheds materials that continue to orbit it or are jettisoned into the universe. As part of this metabolic process orbital environments “self-clean,” meaning that various planetary forces allow materials to leave and rejoin the surface, as well as capture that which other planetary bodies have jettisoned. In a certain sense, for something to be called “orbital space debris” depends entirely on human beings deciding something is no longer valuable, useful, or notable. Yet, what becomes of space debris depends on the power of the Earth itself.7 After all, debris is not something that troubles planets, but defines them. According to Lisa Messeri, the prevailing definition of a planet is an object that is “large enough to have either captured or expelled the debris to other orbits” (2016, 8). If not for Earth’s gravitational force, bending spacetime as it does, it would not require so much expenditure to escape its orbit, nor would so much material fall back to Earth or remain in orbit after the fact. As Lisa Ruth Rand notes, “the geophysical world of outer space” is “a historical actor of equivalent importance to astronauts, engineers, governments, and publics” (2016, 13). The planet’s metabolic relationship to debris is not simply a threat to life, but may help spread it across the cosmos.8 Anthropogenic space debris mixes with the naturally occurring debris of orbital environments to generate new risks and possibilities. Unlike functional satellites, which can be manipulated and brought more or less in sync with the designs of those on the ground, the alternative spatial and temporal rhythms of space debris represent a distinct risk to other things (and persons) in orbit. As such, they also represent a potential barrier to further human exploration and exploitation of space. To begin with, space debris is potentially dangerous to spacecraft. Space debris is partly assessed by treating returning spacecraft in a way they were never intended, as a “hypervelocity impact capture medium” as they are dented more by artificial objects than natural meteorites (Bernhard, Christiansen, and Kessler 1997). The impetus for tracking and modeling space debris thus comes from the temporal possibilities it threatens. This includes a hypothetical feedback process whereby objects continually collide and spread out, converting Earth orbits, especially in LEO, into a hazardous environment filled with tiny fragments. Space debris would then circle eternally overhead like a cloud of bullets awaiting a target, trapping us in fear on the surface. This was used to produce a new element of space horror in the recent science fiction film Gravity (2013), where space debris played a key role and was depicted as a monstrous threat—like a swarm of abiotic locusts—that cycled the Earth with an alien regularity. In this film, without warning debris hurtles into view to annihilate spacecraft or slaughter hapless astronauts.9 Whether this sort of possibility is a likely scenario or not, it reflects anxiety about the unexpected and emergent spacetime of materials orbiting the Earth. The time they threaten is not only the immediate present but future plans, which are increasingly incorporated into fantasies of space travel. At least one of the astronomers I spoke with considered space debris a broader environmental problem. One of the older staff members at the Kopernik Observatory was Nicholas, who grew up in the Southern Tier and designed computer hardware for IBM. When I interviewed Nicholas, he was preparing a talk for the public on the search for life and its creation from inorganic materials, a subject of great personal interest. This gave him a unique view on the ecological risks of space exploration, “I think of debris as sort of garbage. Stuff that’s out there, you don’t know what to do with it so you just leave it laying around, it’s like cluttering on a highway. You know?” For Nicholas, depositing leftover materials from missions, like the Cassini probe, on a foreign planet is about more than the technical junk itself. Even the most sanitized bit of space equipment might carry remnants of the living world it came from. Nicholas had pictures in his Facebook feed of tardigrades (or water bears), the peculiar microbes that seem capable of withstanding the vacuum of space. “To me that’s one of the areas that you could contaminate, if you’re searching for life, you don’t want to contaminate it. NASA scientists are aware of these concerns, which are normally glossed as planetary protection and were included as part of the Outer Space Treaty of 1967. This stipulates the necessity of protecting the Earth from organisms that might exist beyond it, and protecting other planets from contamination by human and nonhuman earthlings. For instance, Cassini was positioned to collide with Saturn so that it would not inadvertently contaminate life that might exist on one of the gas giant’s moons (life which, many astronomical enthusiasts would be quick to point out, Cassini’s photographs had helped demonstrate might exist). And Nicholas was also not alone in thinking that enthusiasm for space exploration could lead to denial about its unforeseen consequences.10 Not everyone agrees, however. In 2018, the SETI institute sponsored a debate over planetary protection between a member of NASA and founder of the Mars Society and author Robert Zubrin. During the debate, Zubrin accused planetary protection of being nonsensical, since planets exchange substances all the time on their own, and dangerous, since it could limit human exploitation and exploration of the universe. Space debris is meaningful as both barrier and bridge to desirable futures. These hoped-for futures involve, for instance, further exploration and exploitation beyond LEO and into the very valuable and legally contested domain of geostationary orbit, where satellites can more easily analyze from and transmit data to the entire planet. This also includes NewSpace initiatives that seek to extend capitalism and empire beyond the limits of the Earth, whether to mine asteroids or colonize Mars.11 Such initiatives demonstrate a clear motivation to clean up the polluted and risk-filled environment in the vicinity of Earth. From this admittedly interested perspective, the presence of space debris limits the utilization of LEO, MEO, and GEO, creating risks for any state and/or capital investment. Insofar as space debris influences assessments concerning the utilization of outer space for various ends, it directly mediates the futures that space agencies and industries imagine possible and desirable. It may be that the risks of orbital debris are being somewhat amplified by filmmakers and the media more broadly. After all, most chunks of space debris burn up completely before descending to Earth, posing little threat to life on the surface. And only those nations and corporations powerful enough to summon the resources to escape the planet’s gravitational pull, to operate the ISS for example, place themselves directly at risk. In this regard, space debris is somewhat analogous to floating Pacific garbage patches in the world’s oceans (see chapter 6). While troubling and aesthetically striking, space debris and garbage patches are located in little-used borderlands rather than directly inhabited landscapes. They would seem to lack an affected public, that is, a collective of interested social actors directly impacted by the problem and thus likely to organize to bring the problem to light. The analogy between the garbage patches and space debris is more than incidental. At the opposite side of the Pacific from the first garbage patch to be discovered is another dumping zone. Known as Point Nemo—the place in the ocean furthest from any land—this stretch of ocean has been used for decades as a convenient place to deposit space debris, when such a thing is possible for space agencies.12 But debris does not always land where one would expect. And the threat of damage from orbital space debris is real. Space debris represents a clear barrier to the continued use of orbital environments. The ISS had to perform approximately eight evasive maneuvers during its first decade of operation in order to avoid collisions with debris. Calculations are normally performed at least three times a day to determine risks of collision over the subsequent seventy-two hours; if the chance of collision with a large enough object is determined to be greater than one in ten thousand, then maneuvers are planned and executed. In late August of 2008, the ISS had to engage in a collision avoidance maneuver when it was nearly struck by just one piece of more than five hundred cataloged bits of debris that resulted from Kosmos 2421’s planned fragmentation earlier that summer (see Johnson and Klinkrad 2009, 5). In this case, the ISS was not dodging anonymous debris, but the specific fragments that are attributable to a Russian spy satellite that was launched in 2006 and began fragmenting two years later. According to widely agreed-upon space policy, if old satellites cannot be sent to the “parking zones” above LEO, then they are sent crashing into the atmosphere to hopefully disintegrate.13 In some ways, concerns over orbital debris can be related to the discourse around climate change, sociologist and historian of science Lisa Ruth Rand argues, insofar as both are global in scope and have been associated with “tipping points” toward certain and perpetual disaster. “With no control over where surviving fragments might land, orbital space became a site from which pollutants could cross geographic boundaries and extraterritorial regions” (Rand 2016, 11). In this sense, orbital regions are not some sort of beyond, disconnected from terrestrial life. Like the atmosphere itself, planetary borderlands are dynamically entangled with life on Earth. Moreover, like the seemingly never-ending threat of nuclear annihilation, they are also associated with the rise of the national security state in the twentieth century.14 When specific entities generate fragments or are threatened by them, orbital space debris begins to resemble other pollution events where there is an alleged perpetrator and a documented victim. More often than not, it is not just any perpetrator accused. Discussions of space debris events frequently single out America’s adversaries as being responsible, as in the episode above, despite the fact that Americans contaminate orbital environments as well and that other countries are frequently responding to and imitating the ongoing American militarization of space. Politicizing space debris in this way fits easily into previous Cold War–era assessments of risk and blame where it is only national rivals to the United States and Europe who break rules and incur risks, namely China and Russia, which implies that Americans are blameless by contrast.15 Space Debris as Military Waste All of the information provided in the section above, outlining orbital space debris as a problem, can be considered entirely without reference to the US military. This not only leaves out an important part of the story of space exploration and exploitation; it also helps further distinctions between civilian science and defense projects, as if the two were completely separate spheres of social action and imagination. In fact, they are continuous. The launch of Sputnik I by the Soviet Union was the beginning of space exploration and the age of satellites. It also set the stage for a new alliance between scientific experts, the federal government, and the DoD. Prior to Sputnik, it was widely believed throughout the US that its Soviet rivals were incapable of launching a satellite into space. When they did, it not only demonstrated a flaw in this chauvinist presumption, but made clear that the Soviet Union had the capacity to launch intercontinental missiles as well. Even though the Eisenhower administration knew, by this time, that there was no “bomber gap” between the two countries, this real embarrassment and virtual threat radically altered relationships between scientists and government and military officials, which had previously been strained by McCarthyism and the Korean War. At least some Americans felt vulnerable to attack, and Eisenhower, who had hoped to reduce what he regarded as wasteful military spending, reevaluated his position on the matter and helped foster the military industrial complex he would later name and criticize.16 If an interpretation of space exploration as militarization is often foreclosed from consideration, one of the reasons is that the intentions behind space discovery have been successfully represented in different ways over the course of NASA’s history. Outer space and space agencies are more popularly represented in terms of discovery, invention, and wonder. This has been a deliberate effort on the part of civilian scientists, government officials, and media organizations to differentiate NASA from military projects. Though NASA was created to be a civilian space agency, the end result of the initial shock and panic surrounding the launch of Sputnik, this was not a foregone conclusion. At the time, all of the technology that might have been used for possible space exploration was in the hands of the US military; consequently, some prominent members of the government scientific advisory, as well as Eisenhower himself, were initially in favor of folding all space exploration within the DoD as part of ARPA. ARPA had itself been recently created in order to consoli- date and reduce waste from interdepartmental competition. Consequently, it only stood to reason that it would also absorb the space agenda, which also had enormous implications for the future of defense. The reason NASA emerged, instead, was the result of fears of the militarization of space, both because of the dangers this would raise for people on Earth but also because it went against the utopian internationalism of many American scientists of the time. It was decided that there would be a civilian space agency, but one that would remain funded by and deeply connected to the military, for fear that the loss of military relevance in space missions would cause it to die on the vine.17 While NASA is a civilian agency, stories of its rise and contemporary relevance illustrate the longstanding relationship its people and projects have had with the DoD. Near-continuous war games in space go back to when the first satellites entered near-Earth orbit and generated ever more debris. According to Rand, “Both superpowers carried out high altitude and exoatmospheric nuclear weapons tests beginning in 1958 and ending in 1963 with the Partial Nuclear Test Ban Treaty” (2016, 10). Secrecy regarding military-related space missions (and the debris they have caused) is most clearly associated with the National Reconnaissance Office (NRO), the “other space agency” that was created in 1961 but kept a secret until 1992 (Paglen 2009, 20–31). As an author from Wired magazine puts it, debris is a legacy of militaristic statecraft: In 2007. . .China decided to de-orbit one of its defunct weather satellites...by firing a missile at it. That certainly took the sat out of its path—but it also created a flume of debris that flung toward the Space Station in 2011. In February 2008, the US Navy launched its own projectile at a spy satellite toward its own satellite. The government claimed to worry that if it let the satellite fall back intact, its hydrazine fuel could release toxic vapors at breathing level. But some, at the time and still, interpret the action militarily. (Scoles 2017) Debris from the NRO was not necessarily from weapons testing, moreover, because weapons are not the only space projects of great military interest. As Rand explains: New kinds of satellites—from giant, shiny inflatable balloons to a ring of hundreds of millions of tiny copper fibers—tested the use of space for communications while spurring controversy over whether such satellites could interfere with astronomy, crowd the electromagnetic spectrum, or present a collision hazard to other spacecraft. (2016, 10) Official histories of space exploration as civilian science tend to demilitarize its relevance. Moreover, when a cover story is needed—as with the U2 spy plane debacle—the official narrative can be called upon to distract or misinform inquiring Americans, allies or rivals. The activities of ARPA and especially the NRO are shrouded in mystery, though that has not stopped amateur astronomers from successfully tracking their activity.18 From the beginning of the space race, nation-states with property in orbit worked out the basic terms of space law (see Beery 2016), which among other things does not allow for the practices of salvage characteristic of maritime law. Instead of seeing these materials as property to be protected, astronomers were historically the first group to mobilize against the contamination of the planetary borderlands with space debris. Sputnik’s launch also began a wave of UFO sightings of all kinds, which would continue over the ensuing decades. As Americans watched the night skies, it was as if their apprehension and mistrust of Soviets somehow turned on their own government. And why not? Space exploration was begun in earnest by competing US and Soviet militaries during the Cold War and continues to be central to the machinations of securitizing states today.19 The ability for anyone with a telescope to track near-Earth objects makes complete secrecy all but impossible. Most recently, space enthusiasts were the first to raise awareness about the possibility of China’s Tiangong-1 space lab tumbling out of the sky, before the Chinese state admitted this was happening. In essence, it was amateur astronomers who first noticed that the space lab was acting more like space debris, against the wishes of a government hoping to keep this from public knowledge. The first story reclassifying the space lab as space debris appeared in June 2016, and was quoted from for the next year and a half by the Guardian and the Washington Post. Eventually the Chinese state admitted that it had lost control of the lab and that it would likely fall to Earth sometime in late 2017 or early 2018 (see David 2016).20

#### The impact is *unending war* and *environmental catastrophe*.

Craven 19 [Matt Craven (Professor of International Law, SOAS University of London, United Kingdom). “‘Other Spaces’: Constructing the Legal Architecture of a Cold War Commons and the Scientific-Technical Imaginary of Outer Space”. European Journal of International Law, Volume 30, Issue 2, May 2019, Pages 547–572, Accessed 1/12/22. <https://academic.oup.com/ejil/article/30/2/547/5536739> //Xu]

Even in the aftermath of the pronounced ‘closure’ of the Cold War, the residue of the formation that was brought into play in space remains very much with us today. On the one hand, outer space has been progressively enveloped within the technological infrastructure of warfare and policing actions – the first Gulf War of 1990 ushering in a new era of ‘smart’ weaponry and GPS-configured surgical violence139 – anticipating, in the process, the ‘remote’ operations of the drone and cyber warfare of the contemporary era. The blurring of the demarcation between the (outer space) technologies of war and peace finds its contemporary parallels in the collapse of a range of other operative distinctions – between the virtual and the real, the combatant and the civilian, the battlefield and the battle space, the interstate and the intra-state. The juridical formations on which these depend, furthermore, have themselves become enveloped within the same strategic operations – ‘lawfare’ becoming the adjunct to a new form of totalized warfare stripped of any spatial determinacy. On the other side, outer space has increasingly become the terrain of speculative capitalism, which, following the growth of space tourism (pioneered by the Russian space administration in the 1990s140), has seen the active development of a range of commercial projects from the construction of sub-orbital ‘space planes’ to asteroid and lunar mining undertaken by both public and private agencies. The imaginative resources for such projects have come from various directions, but a common theme is that impending resource depletion on earth will soon bring such resources within commercial and technological reach, and that outer space will therefore provide a ‘spatial fix’ for a system of global capitalism that might otherwise run into the ground.141 There is, as Katarina Damjanov has noted,142 a deep parallelism here between the juridical opening of the seas (mare liberum), which served to stabilize the system of sovereignty within Europe in the 17th century by extroverting the site of conflict and competition,143 and the opening of outer space three centuries later as another prophylactic measure, even if, in this case, that which was to be guarded against was a planetary-wide, environmental catastrophe. Perhaps the deepest irony, here, is that the mode of salvation on offer is precisely the same as that which is the extant cause of crisis, which one may take to be a remorseless instrumentalization of nature.

#### The alternative is *Worldism* – the refusal of international relations and specialization as dictated by militarism in favor of epistemological interventions into the exercise of Space as a carceral apparatus.

Agathangelou and Ling 09 Anna M. Agathangelou is an Associate Professor in the Departments of Political Science and Women’s Studies at York University, Canada and co-director of the Global Change Institute, Nicosia, Cyprus, L.H.M. Ling is an Associate Professor in the Graduate Program in Inter- national Affairs at The New School, New York, USA., Transforming World Politics: From empire to multiple worlds, The New International Relations Series, 2009.

MAIN ASPECTS Worldism presents world politics as a site of multiple worlds. These refer to the various and contending ways of being, knowing, and relating that have been passed onto us from previous generations. Histories, languages, myths, and memories institutionalize and embody multiple worlds through simple daily acts like cooking and eating, singing and dancing, joking and playing but also through larger events like trade, development, conflict, and war. Worldism registers not only the “difference” that comes from multiple worlds (see Inayatullah and Blaney 2004) but also their entwinements. Selves and others reverberate,2 producing multi- and trans-subjectivities that leave us legacies of reinforcement and conflict, reconstruction and critique, reconciliation and resistance. Such syncretic engagements belie seeming oppositions and contradictions among multiple worlds to reveal their underlying connections despite hegemony’s violent erasures. On this basis, communities have opportunities to heal and recuperate so they can build for another day, for another generation. Worldism as everyday life enacts self–other reverberations and syncretic engagements, especially by communities at the margins. Worldism as an analytical framework theorizes about them. Both types of worldist activity expose the problematic of empire in practice and logics. Building on the postcolonial notion that all parties make history, albeit with unequal access to power, worldism leads to an undeniable conclusion: our mutual embeddedness makes us mutually accountable. One cannot escape from the other. Mutual accountability brings with it duties and responsibilities, to be sure, but also possibilities: that is, (a) an internal dialectic of constant questioning to check and problematize hegemony, so that (b) we can expand our visions, strategies, and approaches beyond the narrow, hegemonic confines of realism/liberal internationalism, in order to (c) arrive at a more inclusive, conciliatory, and democratic world politics. In brief, worldism consists of two simultaneous processes: descriptive and analytical. Worldism-as-description features the following: (a) multi- and trans-subjectivities that institutionalize the social and structural reverberations between selves and others; (b) the agency of all parties, despite inequities and injustices, to create, build, and articulate multiple worlds; (c) syncretic engagements that consolidate the entwinements of multiple worlds into concrete strategies for change, adjustment, adaptation, refor- mulation, and transformation; and (d) community-building that integrates and accretes these syncretic engagements despite denials of such efforts from hegemonic elites and their ideologies. Worldism-as-analysis draws on the struggles and learning undertaken in worldist daily life to emphasize: (a) accountability as a hallmark of worldist inquiry that ensures (b) an internal criticality to question, contest, and challenge hegemony, so that we may (c) arrive at emancipatory construction even as we critique and resist. The critical reader may interject: Couldn’t “agency” and “accountabil- ity” in worldism be taken as a fancy way of blaming the victim? Are Jews, for example, responsible for the Holocaust; slaves for their enslavement; or any oppressed people for their oppression? Worldism as a politics of multiple relations subsumes this liberal, individualist understanding of responsibility. Multiple relations produce a web of effects and consequences to any kind of decisions and/or set of practices. Accountability in worldism asks: Who’s involved, under what conditions, and through which processes can we redress or transform the violence? What kinds of understanding are generated to account for these relations and/or to make them invisible? Without the painful concession that all of us, “abusers,” “victims,” and “innocent bystanders” alike, contribute to the production of hegemonic violence, whether it results in domestic abuse (see Adler and Ling 1995) or state violence (see Ling 1994), we may never realize how violence is conceived, generated, and sustained. By extension, we will never understand ways to end it. Instead, in our injuries and (self ) alienation, we may reproduce time and again the same conditions of violence or hegemony that afflicted us in the past and which seems the only option for the present. Suspended political ideals, in this case, could also block us from action and change. Worldist agency and accountability compel us to face the complicities (including our own) that sustain violence in the making of history, so that we may, as Marx exhorted, change it. Where do these ideas come from?, our reader may ask. Let us delineate the intellectual precedents to worldism. INTELLECTUAL PRECEDENTS Worldism draws on constructivism and postmodernism but also differs from them. Worldism shares with constructivism its emphasis on intersubject- ivity, and with postmodernism its insights on asymmetrical difference: that is, the norms, institutions, practices, and behaviors that set up certain subjects and subjectivities as more privileged and protected than others. Power, then, cannot be reduced to an objectified, reified condition of who’s “on top” or who “has more” but instead results from agents contributing to macro-political structures like ideology, organization, and capitalist relations. Power redefined in these terms stems from an intersubjective consensus within a context of material conditions and relations. The crux here lies in the framing. Since narration as a process is never complete, the story can always change.3 However, worldism departs from constructivism by asking: What kinds of intersubjectivity are constructed, by whom, and for what purpose, and how do theories of subjectivity restructure the world “otherwise”? And is this how we want the world to be? Not probing into the social relations of intersubjectivity, according to worldism, effectively erases the power politics of meaning, including the political economy behind such constructions. And unlike postmodernism, worldism distinguishes power from the resistance it induces. Contra Foucault (1994), we differentiate between the colonizer and colonized in their experiences of colonial power (see Stoler 2002) and the entwinements that follow, both reinforcing and conflicting complicity (see Ling 2002b). Not doing so implicitly reinforces the imperialist assertion that “this is the way the world is”: that is, it is not open to alternative concepts, discourses, strategies, or ways of being. These gaps in constructivism and postmodernism return us to the conventional treatment of power as domination, pure and simple. Ronen Palan (2000), for instance, finds a strain of conservative realism in Alexander Wendt’s “naturalist” version of constructivism, primarily because he claims to offer a method only, and not an interpretation, of politics. Wendt (2005) himself admits as much. For similar reasons, Samir Amin (2004) calls postmodernism an “ideological accessory” to elite, bourgeois interests just as Aijaz Ahmad (1992) considers post-structuralist theories serve as alibis for imperialism. Both post- modernism and poststructuralism value critique and deconstruction over political action, thereby keeping de facto power intact. We note that although critical theories like postmodernism and con- structivism open up spaces to think about shifting power politics, they fall short of transforming the very asymmetries they critique. Inattention to structural, material interest and lack of integrating the Other analytically – that is, as a substantive maker of the world – undermines their claims of emancipatory social theory. Ultimately, the Other becomes a repository of raw materials for hegemonic actors and sites in the North to process. Worldism acknowledges a deep intellectual debt to postcolonial studies. Here, race, gender, sexuality, class, and nationality serve as analytics and substance in examinations of power relations. Postcolonial studies demystify empire’s boast, like Kipling’s “White Man’s Burden,” that the imperial Self makes the world for all Others. And that world is unidimensional (top- down state power), unilateral (center dominates periphery), and unilinear (past–present–future). Postcolonial studies record a more nuanced and multiple history by problematizing the ways colonial power is imposed on the colonized. That is, colonization involves more than a unilateral and mechanical domination of the subjugated by colonizers and their states. As documented by postcolonial studies, tensions and contradictions emerge from these relations (Said 1979; Spivak 1999), leading to adaptations and integrations between hegemonic selves and subaltern others. From this inter- action, “colonizers” and “colonized” produced something together over the course of time that neither anticipated nor perhaps desired but which all learned to live with, and eventually called their own. Divides along lines of property, race, class, language, religion, and ideology did not disappear. They fused, rather, into hybrid, creole, or mélange cultures that, nonethe- less, contested these categories constantly (Ashcroft, Griffiths, and Tiffin 1995; Lewis and Mills 2003). In recognizing that colonizer and colonized mutually construct their sub- jectivities, postcolonial studies attribute to both the legacies of power that we face today. Note, for example, Britain’s principal instrument of colonial and imperial power: the East India Company. Sudipta Sen (1998) shows that, contrary to claims that the British brought capitalism to India, the East India Company had to adjust to pre-existing market structures and political relations to gain access to the thriving trade already in place in northern India.4 Only through this kind of entry could the East India Company later redirect the trade to its favor. L.H.M. Ling (2002b) traces how institutional elites in East Asia learned syncretically and “interstitially” between two world orders – the agrarian-based, cosmo-moral universe of Confucian governance and the Westphalian inter-state system of commerce and trade – to cumulate into what we know as Asian capitalism today. Walter Mignolo (2000) highlights the “gnosis” of thought and action, Self and Other, that comes from centuries of transgressing and reformulating the colonial boundaries that comprise Latin America. Of course, those subjected to hegemony must accommodate others more than those who perpetrate it. Yet hegemony’s very asymmetry highlights the resilience and creativity of the marginalized. Ordinary people can journey across subjectivities to engage syncretically with others, even under conditions of poverty and inequality, to rebuild, reconstruct, and reorganize communities. Cherrie Moraga and Gloria Anzaldua (1983) characterize their straddling of multiple worlds as life on the “borderlands.” Typically, they point out, women of color from the South must bear the biggest burden of negotiating the multiple worlds of language, culture, class, and gender to survive white- majority society in the North despite systemic discrimination and obstacles. Still, they are able to exercise internal reserves of freedom, thought, and action to sort through hegemony, not simply surrender to it. Similarly, the indigenous populations of the Americas, Australia, and New Zealand have entered into treaties with their white majorities to retain aspects of indigenous ontologies by formalizing them in Western institutions (Shilliam 2008).

#### Interp – the 1AC is a research artifact and its reps come before the passing of the plan.

#### 1] Sanitization – militaristic discourse is a self-fulfilling prophecy, which proves reps are necessary and absent critique their epistemology should be assumed incorrect.

#### 2] Spillover – voting aff doesn’t pass the plan but the scholastic endeavors in are deployed in debate impact our subjectivity.

## Case

#### Reasonability on 1AR shells – 1AR theory is very aff-biased because the 2AR gets to line-by-line every 2NR standard with new answers that never get responded to

#### DTA on 1AR shells - They can blow up blippy 20 second shells in the 2AR but I have to split my time and can’t preempt 2AR spin which necessitates judge intervention

#### No new 1ar theory paradigm issues- A] New 1ar paradigms moot any 1NC theoretical offense B] introducing them in the aff allows for them to be more rigorously tested

#### On khan – a] this is all-lives matter framing that denies ongoing genocide in favor of an always short-term extinction threat b] VTL o/w since extinction only matters if there is smth to live for but we have won the thesis claim that there is nothing in humanist logic for racialized bodies so their attempt to preserve [institution] only causes psychological violence through the cruelly optimisic claim that racialized bodies can have it better

#### Group 2 and 3 – a] these are kant pre empts which we didn’t read b] greene doesn’t say util j that consequences matter

#### Testing occurs now and Russia doesn’t see a problem, November testing has 40000predicted collision risks

Swinhoe 2022. February 21, 2022. Dan Swinhoe. Russian ASAT test creating thousands of conjunction alerts for satellite operators. https://www.datacenterdynamics.com/en/news/russian-asat-test-creating-thousands-of-conjunction-alerts-for-satellite-operators/

Russia’s 2021 antisatellite weapon test is creating a huge number of near-misses between space debris and active satellites. The satellite was destroyed by a surface-launched ASAT missile in November, creating a debris cloud eventually thought to be made up of 1,500 pieces. SpaceNews reports, according to space situational awareness company COMSPOC, that the November test is causing so-called “conjunction squalls” of thousands of close approaches, or conjunctions, with satellites over just a few days. “In the first week of April, in that week alone, there will be 40,000 conjunctions that we predict purely from that one event,” said Travis Langster, vice president and general manager of COMSPOC, during a panel at the 24th annual FAA Commercial Space Transportation Conference Feb. 17. November saw Russia destroy the defunct Cosmos-1408 satellite, which was previously orbiting at an altitude of approximately 485 kilometers According to COMSPOC, as the debris orbits precess, they overlap the orbits of remote sensing satellites going in the opposite direction. “When they sync up, you have the perfect storm: they’re in the same orbit plane but counter-rotating, crossing each other twice an orbit, again and again,” said Dan Oltrogge, director of integrated operations and research at COMSPOC. Those squalls last for several days until the orbits precess out of sync. The company said it had noticed thousands of conjunctions – approaches within 10 kilometers – in January as the debris cloud passed by a series of satellites operated by Planet. It is predicting a peak of 14,000 a day in April and another “conjunction squalls” six months later. Other companies including SpaceX’s Starlink constellation are likely to see a large increase in conjunction alerts as well. Oltrogge warned that the conjunction squalls may overwhelm space situational awareness (SSA) systems and make it difficult for operators to identify other potential collisions. “The SSA systems, legacy, and commercial, are all going to get hammered by this,” he said. “If you want to find a needle in a haystack, get rid of the hay. This is adding a lot of hay.” Cosmos 1408 was a Soviet ELINT (Electronic and Signals Intelligence) satellite launched in 1982 and had a mass of 2,200kg. The Russian Military acknowledged the ASAT test: "On November 15, the Defense Ministry of Russia successfully conducted a test, in which the Russian defunct Tselina-D satellite in orbit since 1982 was struck," it said in a statement. Despite rebuke from the US government and others, Russia said the test and subsequent debris "did not and will not pose any threat to orbital stations, satellites and space activity.”

#### No Escalation over Satellites Military Precedent

Zarybnisky 18, Eric J. Celestial Deterrence: Deterring Aggression in the Global Commons of Space. Naval War College Newport United States, 2018. (Senior Materiel Leader at United States Air Force)//Elmer

PREVENTING AGGRESSION IN SPACE While deterrence and the Cold War are strongly linked in the public’s mind through the nuclear standoff between the United States and the Soviet Union, the fundamentals of deterrence date back millennia and deterrence remains relevant. Thucydides alludes to the concept of deterrence in his telling of the Peloponnesian War when he describes rivals seeking advantages, such as recruiting allies, to dissuade an adversary from starting or expanding a conflict.6F 6 Aggression in space was successfully avoided during the Cold War because both sides viewed an attack on military satellites as highly escalatory, and such an action would likely result in general nuclear war.7F 7 In today’s more nuanced world, attacking satellites, including military satellites, does not necessarily result in nuclear war. For instance, foreign countries have used highpowered lasers against American intelligence-gathering satellites8F 8 and the United States has been reluctant to respond, let alone retaliate with nuclear weapons. This shift in policy is a result of the broader use of gray zone operations, to which countries struggle to respond while limiting escalation. Beginning with the fundamentals of deterrence illuminates how it applies to prevention of aggression in space.

#### AT Xu – 1] Plan doesn’t solve it either since you don’t actively establish any “coordinating rules”. 2] The PIC solves it creates a clear norm on what exact use deflection can be used for

#### Group fickling and koubi – 1] didn’t read any resource wars scenario in the 1nc 2] star on this on your flow this is the exact same logic of militarism that seek to squash out problems before they even exist in an effort to reassert control

#### AT David – 1] squo thumps theyre doing debris removal now b] other tech thumps that isn’t asteroid defelction

#### Public Sector Thumps Deflection Technology:

#### a] NASA

Koren 21 Marina Koren 11-30-2021 "NASA Is Practicing Asteroid Deflection. You Know, Just in Case." <https://www.govexec.com/technology/2021/11/nasa-practicing-asteroid-deflection-you-know-just-case/187120/> (a staff writer at The Atlantic. She covers space, including astronaut missions, robotic explorers, and the solar system and has reported from Cape Canaveral, SpaceX's launch site in south Texas, and NASA headquarters in Washington, DC. Previously, Koren was senior associate editor for The Atlantic.)//Elmer

The last thing anyone needs to think about right now is a catastrophic asteroid impact. And, thankfully, most of us don’t have to! Earth is not in immediate threat of a space rock. The chance that a known asteroid big enough to really do damage—or, you know, imperil our entire existence—will strike the planet in the next 100 years is insignificant. (If you want to worry about extinction, consider the extinctions brought on by climate change and other negative repercussions of our presence here on Earth.) But it helps to be prepared for these kinds of scenarios, and luckily there are people for whom thinking about them is a full-time job. So this week, just before Thanksgiving, NASA launched a space mission to test technology that could, someday, help humanity deflect a dangerous asteroid barreling its way. The spacecraft will now spend months zooming toward an asteroid several hundred million miles from Earth. (What did this particular asteroid ever do to us? Nothing—but NASA needs a test subject.) In September 2022, with the asteroid in its sights, the probe will line itself up and then—bam!—smash right into the unsuspecting rock at nearly 15,000 miles an hour. The impact is expected to change the orbit of the asteroid ever so slightly. Afterward, scientists will observe the shift with telescopes on Earth to determine whether this technique could work to protect our planet from a real cosmic threat. [Read: A handful of asteroid could help decipher our entire existence ] This would not be the first time a NASA spacecraft has bumped into an asteroid just minding its own business. Last year, a probe touched down on an asteroid’s surface and blasted it with nitrogen gas to stir up rocks. That mission was designed to collect some of those rocks and return them to Earth so that scientists might better understand how nature shaped the solar system and gave our planet its oceans. NASA punched that asteroid for the sake of science. This new mission is about survival. The Double Asteroid Redirection Test, or DART for short, marks humanity’s first-ever attempt to change the orbit of an asteroid. In some ways, it’s kind of rude? A bunch of “star stuff,” as Carl Sagan called us, has become sentient and smart enough to interfere with orbital mechanics and change, on a small scale, the nature of its solar system. It’s a weirdly godlike power move—you know, shifting heaven and earth for our own purposes. But here we are, throwing a spacecraft the size of a vending machine at an asteroid as big as Egypt’s Great Pyramid. The series of events that brought us to this particular point in human history can be traced back to 1998, when an astronomy institute issued an alert about a recently discovered asteroid that looked like it could hit in 2028. In astronomy time, that’s basically tomorrow, so if the asteroid was indeed a threat, we needed to do something about it soon. Scientists at NASA quickly found that this rock wasn’t going to collide with Earth, but the agency did establish a center devoted to estimating the probability of asteroids and comets hitting Earth, so that we might have a chance at actually stopping them. [Read: We’re heading straight for a demi-armageddon] The DART mission is aiming for Dimorphos, a small asteroid that orbits a bigger asteroid, Didymos, like a moon. If the mission works as intended, DART will carve a crater into the surface of Dimorphos and fling out a bunch of rocky debris, known as ejecta, esxplains Angela Stickle, a planetary scientist at the John Hopkins University Applied Physics Laboratory who leads the team that does impact simulations. “As that ejecta leaves the asteroid, it acts kind of like a rocket engine and pushes the asteroid,” Stickle told me. “You’re creating sort of a natural engine on the asteroid that then slows down its velocity.” Stickle and her team predict that the impact will shrink Dimorphos’s 12-hour orbit by about 10 minutes or so. A change in an object’s velocity translates into a change in its orbital path; if an asteroid were heading toward Earth, a version of this technique might shift an asteroid’s trajectory enough to turn a certain disaster into a near miss. In case you, like I, a person who usually assumes the worst, are wondering whether NASA could flub this mission and accidentally shove the asteroid toward Earth—don’t worry. A vending machine–size spacecraft isn’t capable of knocking Dimorphos out of its orbit around Didymos, or even inflicting serious damage. “This isn’t going to destroy the asteroid,” Nancy Chabot, the mission’s coordination lead at the Applied Physics Laboratory, told reporters earlier this month. “It’s just going to give it a small nudge.” The DART mission faces some unknowns. Astronomers think Dimorphos is probably a common kind of rocky asteroid. But asteroids have surprised them before. The asteroid that NASA touched down on last year, Bennu, turned out to be squishier than expected. And squishy asteroids would be more difficult to deflect, Cristina Thomas, a planetary scientist at Northern Arizona University who leads an observations team on DART, told me. “It’s a much simpler physics experiment if you take one hard thing and you smash it into another hard thing,” she said. [Read: How to get an asteroid named after you] In 2024, another planetary-defense mission, operated by the European Space Agency, will leave Earth for Didymos and Dimorphos to survey the scene and provide a close-up look of the aftermath of humanity’s attempt to mess with an asteroid. Meanwhile, on Earth, NASA will continue to search for and monitor near-Earth objects of a certain size. In 2005, Congress directed NASA to find at least 90 percent of the potentially hazardous asteroids that are statistically likely to exist out there. Remember when I said that no known asteroids have a significant chance of crashing into Earth in the next century? Well, NASA was supposed to meet that 90 percent goal as of 2020, but so far scientists have managed to find only 40 percent. Objects like Dimorphos appear fainter to telescopes than larger asteroids, which are easier to study and rule out as a hazard, Thomas said. “But an object of this size would actually pose a hazard to the planet,” she told me. Let’s say that someday astronomers identify a new asteroid that, unlike the 1998 discovery, could really be perilous. Scientists have practiced this scenario every year for nearly a decade in a NASA-run event about planetary defense. This year astronomers pretended that they had discovered an asteroid with a slight probability of hitting Earth in just six months. After a month of observations in this hypothetical scenario, that likelihood jumped to 100 percent. Astronomers needed more than a year to determine where exactly a hazardous asteroid would strike Earth, and they didn’t have that kind of time. Within days of impact, astronomers had only predictions about the regions at risk, including the places deemed “unsurvivable.” This particular exercise ended with a bleak conclusion: With a more powerful telescope scanning the skies, astronomers would have spotted this asteroid sooner, and space agencies would have had time to mount a mission like DART to attempt to deflect it away from Earth. And that telescope would have needed to be in place back in 2014. A starter mission such as DART is an important step in giving Earth a chance in this future. Despite what pop culture (or, more specifically, Armageddon) has led us to believe, space agencies won’t rely on a group of brave oil-rig workers but on spacecraft with good GPS to save us. (NASA actually invited Bruce Willis to attend the launch in California; the actor declined.) Any nuclear weapons—another option for destroying an asteroid headed our way—would likely be delivered by autonomous spacecraft, not astronauts. A future asteroid-redirect mission might be informed by the designs of previous spacecraft that destroyed themselves in the name of planetary defense, and guided by telescopes that have kept a watchful eye on the night sky, logging every new asteroid. When it comes to Earth-threatening asteroids, to paraphrase Aerosmith, you “don’t want to miss a thing.”

#### b] ESA

ESA 20 European Space Agency October 2020 "Value created by ESA's planetary defence initiative and Hera asteroid deflection mission" <https://space-economy.esa.int/article/85/value-created-by-esas-planetary-defence-initiative-and-hera-asteroid-deflection-mission> //Elmer

Value created by ESA's planetary defence initiative and Hera asteroid deflection mission [Oct/2020] In view of preparing Space 19+ and in order to inform decision makers on the impact of their investment on the European economy and society, ESA has conducted several studies to assess the socio-economic benefits of its programmes. One of these assessments evaluates the socio-economic benefits enabled by the Planetary Defence Programme, part of ESA’s Space Safety Programme and in particular the Hera asteroid deflection mission. With the objective to develop capabilities and technologies to detect, assess and deflect objects on collision route to Earth, ESA’s Planetary Defence roadmap foresees key tasks in the following areas: Threat detection and risk analysis; and Prevention, mitigation and protection (including Hera mission). Hera is the European component of the Asteroid Impact and Deflection Assessment (AIDA) collaboration with NASA. Its main objective is to characterise the outcome of a kinetic impactor test system (performed by NASA’s Double Asteroid Redirection Test DART mission to be launched in 2021 on a SpaceX launcher) on the smaller companion (Didymoon) of the Didymos binary asteroid and to provide the necessary physical and dynamical data to fully validate the kinetic impactor asteroid deflection technique (so as to be applicable to other asteroid targets). In addition, Hera will investigate relevant future in-situ resources utilisation activities, as well as gather scientific insights on the evolution processes of our solar system. In summary, Hera combines a broad range of objectives, both technical and scientific. In terms of economic impacts, investing 290 Million Euros into the Hera mission will support the European industry by strengthening their technology advantage, and thus, their competitiveness to target promising adjacent space markets with a total addressable opportunity ranging between 12 and 16 billion Euros by 2038. Considering the indirect and induced impacts on the economy, this would result in a GDP impact (value-added for the industry and the overall economy) of ca. 620 million Euro cumulatively, and a Hera mission’s Value-Added to Cost ratio of 2.0. This means that for every Euro invested in ESA’s Hera mission, the society will benefit from ca. 2 Euros in value-added. This study was conducted by SpaceTec Partners and was completed in May 2020. To access the document and more detailed information, please click here or login to access the restricted area.

#### That thumps the Aff – your 1AC U/Q is about Governments NOT Private Actors – if the 1AR pivots the I/L to “Size of Link” then Technology existing proves Pandora’s Box has been opened whether or not Asteroid Mining uses it or not.

#### AT Howe – 1] Proves they can’t no link out of Mining Good – AAC is irreparably tied technically to PD – separating the two ensures failure of the other and 2] Not reverse causal – yes its part of Mining BUT Mining isn’t the make-it-break-it for the development of that tech since they develop separately – banning it hurts Mining but banning Mining wouldn’t spill-over.

#### AT Mares – 1] More mining doesn’t make it more accessible – price, technical, and motive barriers still apply, 2] If they have enough technical capacity to implement, then they can just make the tech themselves thumping the unique I/L,

#### AT Lovett – Response to a Private Company vs a Country is far different – the plan doesn’t ban Countries from just blasting NEOs or using them for Planetary Defense OFFENSIVELY.

#### AT Neeness – No Perm – doesn’t specify Earth.