# **1NC**

**I negate the resolution, definitions:**

**Appropriation:** [Cambridge Dictionary] **to take something for your own use, usually without permission**

**Private Entity: [https://www.law.cornell.edu/definitions/uscode.php?height=800&def\_id=6-USC-625312480-168358316&term\_occur=999&term\_src=title:6:chapter:6:subchapter:I:section:1501]**

**the term “private entity” means any person or private group, organization, proprietorship, partnership, trust, cooperative, corporation, or other commercial or nonprofit entity, including an officer, employee, or agent thereof.**

**Outer Space: [Webster Dictionary] space immediately outside the earth's atmosphere**

# **1NC – Framing**

**I value Justice, and the standard is maximizing expected well-being**

**Existential threats independently outweigh – all life has infinite value and extinction eliminates the possibility for future generations**

**Schell 82** [Jonathan Schell, Scholar and Visiting Fellow at Yale University. “The Fate of the Earth”]

Up to now, every risk has been contained within the frame of life; **extinction** would shatter the frame. It **represents not the defeat of some purpose but an abyss in which all human purposes would be drowned for all time. We have no right to place the possibility** of this **limitless, eternal defeat** **on the same footing as risks** that we run **in the ordinary conduct of** our **affairs** in our particular transient moment of human history. To employ a mathematical analogy, we can say that **although the risk of extinction may be fractional, the stake is, humanly speaking, infinite, and a fraction of infinity is still infinity**. In other words, once we learn that a holocaust might lead to extinction **we have no right to gamble**, because **if we lose, the game will be over, and neither we nor anyone else will ever get another chance.** Therefore, although, scientifically speaking, there is all the difference in the world between the **mere possibility** that a holocaust will bring about extinction **and** the **certainty** of it, morally they **are the same**, and we have no choice but to address the issue of nuclear weapons as though we knew for a certainty that their use would put an end to our species. In weighing the fate of the earth and, with it, our own fate, we stand before a mystery, and in tampering with the earth we tamper with a mystery. We are in deep ignorance. Our ignorance should dispose us to wonder, our wonder should make us humble, our humility should inspire us to reverence and caution, and our reverence and caution should lead us to act without delay to withdraw the threat we now pose to the earth and to ourselves.

**Pleasure and pain are intrinsically valuable.**

**Moen 16** [Ole Martin Moen, Research Fellow in Philosophy at University of Oslo “An Argument for Hedonism” Journal of Value Inquiry (Springer), 50 (2) 2016: 267–281] SJDI

Let us start by observing, empirically, that **a widely shared judgment about intrinsic value and disvalue is that pleasure is intrinsically valuable and pain is intrinsically disvaluable. On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues.** This inclusion makes intuitive sense, moreover, for **there is something undeniably good about the way pleasure feels and something undeniably bad about the way pain feels, and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have.** “Pleasure” and “pain” are here understood inclusively, as encompassing anything hedonically positive and anything hedonically negative.2 The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. **If you tell me that you are heading for the convenience store, I might ask: “What for?”** This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. **You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?”** This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: **“Well, I want it for the pleasure of drinking it.”** If I then proceed by asking **“But what is the pleasure of drinking the soda good for?”** the discussion is likely to reach an awkward end. The reason is that the **pleasure is not good for anything further**; it is simply that for which going to the convenience store and buying the soda is good.3 As Aristotle observes: **“We never ask [a man] what his end is in being pleased, because we assume that pleasure is choice worthy in itself.”**4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” **We take for granted that if something is painful, we have a sufficient explanation of why it is bad. If we are onto something in our everyday reasoning about values, it seems that pleasure and pain are both places where we reach the end of the line in matters of value.**

### **Prefer this framework for two reasons:**

### **1] Death is bad and extinction outweighs – a) agents can’t act if they fear for their bodily security which constrains every ethical theory, b) it destroys the subject itself – kills any ability to achieve value in ethics since life is a prerequisite which means it’s a side constraint since we can’t reach the end goal of ethics without life**

### **2] Actor specificity—Governments must aggregate since every policy benefits some and harms others, which also means side constraints freeze action. Actor-specificity comes first since different agents have different ethical standings.**

# **Disadvantages**

### **1 - Private Companies Better**

#### **Private companies are more efficient are accomplishing more than NASA**

**Follett 21** [Andrew Follett, Andrew Follett previously worked as a space and science reporter for the Daily Caller News Foundation. He has also done research for the Congressional Committee on Science, Space and Technology, the National Aeronautics and Space Administration, the Cato Institute, and the Competitive Enterprise Institute. He currently conducts research analysis for a nonprofit in the Washington, D.C., area., “Private Firms Are the Key to Space Exploration”, 08/21/2021, The National Review, https://www.nationalreview.com/2021/08/private-firms-are-the-key-to-space-exploration/] /Triumph Debate

But **NASA’s troubles are**, depressingly, **likely to get even worse**. **In November the James Webb Space Telescope (JWST) will finally launch**, **after taxpayers have forked over $9.7 billion**. **It was originally supposed to launch in 2007 on** a budget of **$500 million**. That means **the project is over a decade behind schedule and costing almost 20 times its initial budget**. Perhaps the telescope, meant to locate potentially habitable planets around other stars and perhaps even extraterrestrial life, could instead search for a calendar . . . or fiscal sanity . . . in the stars? **JWST isn’t the first NASA space telescope to suffer cost overruns and setbacks**. The Hubble Space Telescope (HST) was originally intended to launch in 1983, but technical issues delayed the launch until 1990 because the main mirror was incorrectly manufactured. JWST is very likely to fail because it is supposed to unfold itself “origami style” in space in an extremely technically complicated process. If difficulties arise, JWST lacks HST’s generous margin for error because of its location far beyond earth’s orbit at the Sun-Earth L2 LaGrange point. NASA currently lacks the capability to send a team of astronauts out that far to fix any problems. Even if NASA could get out to JWST, the telescope doesn’t have a grappling ring for an astronaut to grab onto and thus could potentially kill astronauts attempting to fix it. It is hard to imagine a better example of the private sector’s amazing ability to outcompete government bureaucracy and mismanagement than NASA’s planned Shuttle replacement, the Space Launch System. **It is estimated to cost more than $2 billion per flight**. That’s on top of the $20 billion and nine years the agency has already spent developing the vehicle. **Contrast that with** the comparatively inexpensive **$300 million spent by SpaceX** to develop the Falcon 9 **in a little over four years, and the fact that each Falcon 9 costs around $62 million**. One SLS launch could pay for over 32 SpaceX launches. **Private ventures** such as SpaceX **are more efficient because they have a lot more incentive to avoid excessive costs and focus on solutions: Their own money is at stake**, and **people spend their own money more carefully than they spend taxpayer dollars collected from others**. Multiple private American space firms are currently pursuing accomplishments beyond those of NASA, and they are more advanced and ambitious than the entire government space programs of China and the European Union combined. So **one possible solution to NASA’s woes would be to greatly increase its reliance on commercial launch providers**. And one way to do that would be to return to the system that made civil aviation great: prizes to reward private-sector innovation. Charles Lindbergh flew across the Atlantic Ocean in pursuit of the privately funded Orteig prize, valued at almost $395,000 in today’s money. Another famous example was the X Prize, which rewarded Burt Rutan’s company Scaled Composites with over $14 million in today’s money for becoming the first nongovernmental organization to launch a reusable and manned space vehicle, SpaceShipOne. The X Prize succeeded in creating over $100 million in investment by private corporations and individuals. Aerospace experts expect that establishing a $10 billion prize for successfully landing a crew on Mars and returning it safely to earth could very well lead to a successful landing. That’s a bargain compared with the $500 billion cost estimates NASA puts out for the same objective. And of course in the worst-case failure scenario for a prize program, taxpayers would pay nothing until the mission was complete. A **system based on private enterprise incentivized by a fixed prize would end government cost** overruns and **waste**. The cause of space exploration is simply too important to leave to the public sector.

#### **Private companies are surpassing the government in advancements**

### **Futurism n.d. [Futurism, “Private Companies, Not Governments, Are Shaping the Future of Space Exploration”, https://futurism.com/private-companies-not-governments-are-shaping-the-future-ofspace-exploration] /Triumph Debate**

Sixty years ago, the Soviet Union launched the first artificial satellite into orbit. The event served as the starting pistol in what would come to be known as the Space Race, a competition between the U.S.S.R. and the United States for spaceflight supremacy. In the decades that followed, the first human reached space, a man walked on the Moon, and the first space stations were built. The U.S.S.R. and the U.S. were soon joined by other world powers in exploring the final frontier, and by the time the Soviet Union was dissolved in 1991, the contentious Space Race was something of a distant memory. In recent years, however, a new Space Race has taken shape—Space Race 2.0. Rather than powerful nations guided by presidents and premiers, however, the competitors in this race are tech startups and private businesses spearheaded by billionaire entrepreneurs. And while the current atmosphere is far less contentious than that of the first Space Race (save the odd tweet or two), the competition is just as fierce. A CROWDED FIELD SpaceX, Blue Origin, Bigelow Airspace, Virgin Galactic, Boeing, Lockheed Martin… Not only has the number of **private companies** engaged in space exploration grown remarkably in recent years, these companies are quickly **best**ing their **government**-sponsored **competitors.** “We’re starting to see advances made by private entities that are more significant than any advances in the last three years that were made by the government,” Chris Lewicki, CEO and President of Planetary Resources, tells Futurism. Amazon CEO **Jeff Bezos’s Blue Origin and** Tesla CEO **Elon Musk’s SpaceX are arguably the two companies that are setting the pace.** In November 2015, the former completed the first successful vertical rocket landing after sending their New Shepard 100 kilometers (62 miles) into the air. SpaceX landed its own rocket a month later, only they did so with a craft twice as heavy as Blue Origin’s and traveled all the way into space first. A month after that, in January 2016, **Bezos’s company became the first entity to re-launch and re-land a previously used rocket**. SpaceX followed suit in 2017. **“The government was never able to [build reusable rockets]**, but now, **two private companies** within the space **of the same year have** done that,” points out Lewicki. Not only are private companies already surpassing their government counterparts, **several are poised to widen their lead in the coming months and years.** If all goes according to plan, when SpaceX’s Falcon Heavy launches in September, it’ll take the title of the world’s most powerful rocket away from NASA’s Saturn V. Virgin Galactic is already selling tickets for what it expects to be the first private spaceflights, which will take place aboard the sleek VSS Unity. SpaceX plans to send space tourists to the Moon in 2018, and then in 2024, the company hopes to launch a system that will take people all the way to Mars…roughly 5-15 years before NASA expects to do the same. ALL ON THE SAME TEAM Private companies may be in the lead, but the finish line for this Space Race isn’t exactly clear. The first iteration was arguably “won” when Neil Armstrong took his first steps on the Moon, so does this sequel end when we establish the first Moon base? When a human walks on Mars? When we leave the solar system? Truthfully, the likelihood of humanity ever calling it a day on space exploration is slim to none. The universe is huge, with galaxy estimates in the trillions, so the goalpost will continue moving back (to bring another sport into the analogy). Rather than focusing on competing in what is ultimately an unwinnable race, private and government-backed space agencies can actually benefit from collaboration thanks to their inherent differences. “The way that SpaceX, Planetary Resources, or Virgin Galactic approaches space exploration is going to be very different from NASA or the Air Force,” explains Lewicki. **Private companies aren’t beholden to the same slow processes that often stall government projects**, and they can secure or reallocate funding much more swiftly if need be. However, unlike agencies like NASA, they do have shareholders to keep happy and a need to constantly pursue profitability. The two sectors, therefore, have a tremendous opportunity to help one another. Private companies can generate revenue through government contracts —for example, NASA has contracted Boeing to transport astronauts to the International Space Station (ISS), and SpaceX just closed a deal with the U.S. Air Force to launch its secretive space drone. This leaves the government agencies free to pursue the kind of forward-thinking, longer-term research that might not immediately generate revenue, but that can be later streamlined and improved upon in the private sector. Ultimately, Space Race 2.0 has no losers. The breakthroughs happening in space exploration benefit us all, and truly, a little friendly competition never hurt anyone (unless you count the egos bruised by those tweets).

#### **Space innovation leads to life saving technologies – commercialization is key**

**Raghavan 21 [Seetha Raghavan, Seetha Raghavan is a professor in UCF’s Department of Mechanical and Aerospace Engineering, “The Impact of Innovation in the New Era of Space Exploration?”, 08/04/2021, UCF Today, https://www.ucf.edu/news/the-impact-of-innovation-in-the-new-era-of-spaceexploration/] /Triumph Debate**

Every once in a while, a confluence of discoveries, events and initiatives results in a breakthrough so significant that it propels the entire world to a higher level, redefining what is possible in so many different fields. This breakthrough is taking centerstage now, as the new era of space exploration — catalyzed by increasing launch access — dawns upon us. The surge of **innovation** that comes with this will **create new opportunities and inspire the next generation** of doers. When this happens, boundaries between scientific and social impact are blurred. **Innovation leading to scientific discovery can benefit society** in the same way that social innovation can diversify and support scientific innovators, who can contribute to global progress. To ride this wave of progress, we must all participate and innovate in the new era of space exploration. The intersection of space exploration, innovation and impact isn’t a new phenomenon. In the past, technology developments and spin-offs from space research have consistently found their way into communities worldwide sometimes with lifesaving benefits. The International Space Station supports experiments that have led to discoveries and inventions in communication, water purification, and remote guidance for health procedures and robotic surgeries. Satellite-enabled Earth observation capabilities that monitor natural disasters, climate and crops often support early warnings for threats and mitigation strategies. Space exploration has always been relevant to everyone no matter the discipline or interest. **Commercialization of space has been key** in many ways to the current boost in “firsts” over the last few years. **It** has **spurred innovation** in launch vehicles and related technologies that **led to firsts in** vertical-**takeoff**-vertical **landing rocket tech**nology**, reusability of rocket boosters and** privately **developed crewed missions to orbit**. Concurrently, NASA has continued to captivate our imagination with the first flight of a helicopter in another world, a mission to return an asteroid sample to Earth and sending a probe to make the closest ever approach to the sun. While we celebrate the scientific progress, there is a vastly important question that we all need to focus on: How can we drive the surge in innovation offered by increased access to space, to benefit humankind? Access to low-Earth orbit, and eventually human exploration of space, is a portal to achieve many impactful outcomes. The numbers and completion rate of microgravity experiments conducted by scientists will be greatly increased as a range of offerings in suborbital flights provide more opportunities to advance critical research in health, agriculture, energy, and more. Lunar, planetary, and even asteroid exploration may lead to discoveries of new materials — busting the limitations now imposed on capabilities for energy, transportation, and infrastructure or creating new sensors and devices that enhance safety on Earth. Space tourism —one can hope — has the power to potentially create an awareness of our oneness that may lead to social change. B

### **2 - Resource Extraction**

#### **Humanity is expanding, and space extraction is necessary to meet future needs**

**Pelton 16 [Joseph Pelton, Director @ International Association for the Advancement of Space Safety, “Space Mining – The Reality of Tomorrow?” Room Space Journal of Asgardia, https://room.eu.com/article/space-mining-the-reality-of-tomorrow] /Triumph Debate**

Today, many would be startled to learn, **there are four United States-based companies whose business plans involve ‘space mining’ for profit**. These companies include Planetary Resources Inc, Deep Space Industries, Moon Express, and Shackleton Energy Corporation. There is a great abundance of wealth of natural resources on our six sextillion ton planet. But we **humans**, now **numbering** some **7.5 billion and likely** to grow as large as **12 billion by 2100**, **have** a vast **hunger for products and energy**. With our automated manufacturing machines we have developed to ability to manufacture a relentless army of goods and we consume more and more energy every year. If all of the natural resources on our planet are used wisely and in a sustainable fashion they can be recycled and used over and over again. Modern civilization, with its complex infrastructure, burgeoning population and surging urban complexes will soon need to adjust to emerging 21st century realities. By the end of this century there may be perhaps a 100 megacities of more than 10 million people. Our world will be experiencing significant elements of climate change, major environmental shifts, and growing natural resource needs. The world as we know it today will significantly change or, life as we know it today, will no longer be sustainable. In short big changes are coming. We will be forced to shift to sustainable and renewable energy sources. We will be forced to engage in more and more recycling. We will have to change our ways of life as our cities absorb more than 70 per cent of the world’s population. **We** will, despite all these shifts, still **need to** reach out into space and **start** to evolve **a space-based economy**. US Secretary of State John Hay once famously said: “The Mediterranean is the ocean of the past, the Atlantic is the ocean of the present, and the Pacific is the ocean of the future.” And over time the global economy has expanded to make this prediction a reality. Soon the economies of China, India, Indonesia and Japan - plus the smaller countries of Singapore, Taiwan, Republic of Korea, Thailand, etc - will outstrip those of the US and Europe. Asthese developing economies get more prosperous and **demand for natural resources continues to grow, the availability of natural resources will become a growing problem**

#### **Expansion to space is necessary to avoid energy shortages and climate change**

**Ursul & Ursul 20** [Arkady Ursul, Ecology @ Academy of Sciences of Moldova, Tatiana Ursul, Philosophy @ National Research Technical University, “On the Path to Space Mining and a Cosmic Sustainable Way of Socio-Natural Interaction,” Philosophy and Cosmology, http://ispcjournal.org/journals/2020/02/PhC\_25\_UrsulUrsul.pdf]

**In the near space future, mankind will have to massively ship the production of energy and materials outside the planet**, instead of deploying this industry in undeveloped territories, for example, in deserts, the Arctic, the Antarctic or in the oceans and seas. **The main reason** for the **relocation of** the **energy** and some other industries **outside the Earth is related to** the transition to SD and especially **with a number of environmental issues, such as global warming and depletion of the world’s fossil fuel and** **energy resources with the increase of energy consumption.** Therefore, the development of any new terrestrial territories, for example, the ocean, is economically inefficient and environmentally impractical. In the case of the development of space bodies, a new anthropogenically-space method and a method of preserving the terrestrial biosphere, as well as the creation of it of the most favorable conditions for the existence of mankind and other forms of life, appear. Therefore, those projects that in the acceptable future can be implemented in space are hardly worthwhile to implement on the planet. A fundamental conclusion about the need for the future to “split” production into terrestrial, mainly agricultural and space, mainly industrial, between which the products of activity can and will be exchanged has already been made on the basis of an analysis of current trends in the environmentalization of economic and other anthropogenic activities in the context of achieving global sustainability. Agricultural production in the perspective of the transition to SD should fit into the biosphere, using intensively-ecologized methods of economy management (Bazaluk et al., 2020). The strategic perspective of the global-space production split is the most natural and effective one and is understandable in terms of ensuring ecoand geo-security of the civilization’s existence

### **3 - Innovation**

#### **Strong commercial space catalyzes tech innovation – progress at the margins and spinoff tech change global information networks**

Joshua **Hampson 2017**, Security Studies Fellow at the Niskanen Center, 1-25-2017, “The Future of Space Commercialization”, Niskanen Center, https://republicans-science.house.gov/sites/republicans.science.house.gov/files/documents/TheFutureofSpaceCommercializationFinal.pdf

Innovation is generally hard to predict; some new technologies seem to come out of nowhere and others only take off when paired with a new application. It is difficult to predict the future, but **it is reasonable to expect that a growing space economy would open opportunities for technological and organizational innovation**. In terms of technology, **the difficult environment of outer space helps incentivize progress along the margins.** Because each object launched into orbit costs a significant amount of money—at the moment between $27,000 and $43,000 per pound, though that will likely drop in the future —each 19 reduction in payload size saves money or means more can be launched. At the same time, the ability to fit more capability into a smaller satellite opens outer space to actors that previously were priced out of the market. This is one of the reasons why small, affordable satellites are increasingly pursued by companies or organizations that cannot afford to launch larger traditional satellites. These small 20 satellites also provide non-traditional launchers, such as engineering students or prototypers, the opportunity to learn about satellite production and test new technologies before working on a full-sized satellite. **That expansion of developers, experimenters, and testers cannot but help increase innovation opportunities**. **Technological developments from outer space have been applied to terrestrial life since the earliest days of space exploration**. The National Aeronautics and Space Administration (NASA) maintains a website that lists technologies that have spun off from such research projects**. Lightweight** 21 **nanotubes**, useful in protecting astronauts during space exploration, **are now being tested for applications in emergency response gear and electrical insulation**. The need for certainty about the resiliency of materials used in space led to the development of an analytics tool useful across a range of industries. Temper foam, the material used in memory-foam pillows, was developed for NASA for seat covers. **As more companies pursue their own space goals, more innovations will likely come from the commercial sector. Outer space is not just a catalyst for technological development.** Satellite constellations and their unique line-of-sight vantage point **can provide new perspectives to old industries**. Deploying satellites into low-Earth orbit, as Facebook wants to do, can connect large, previously-unreached swathes of 22 humanity to the Internet. **Remote sensing technology could change how whole industries operate, such as crop monitoring, herd management, crisis response, and land evaluation, among others**. 23 While satellites cannot provide all essential information for some of these industries, they can fill in some useful gaps and work as part of a wider system of tools. **Space infrastructure, in helping to change how people connect and perceive Earth, could help spark innovations on the ground as well. These innovations, changes to global networks, and new opportunities could lead to wider economic growth.**

#### **Short innovation cycles mean every contract counts**

John J. **Klein 19**, Senior Fellow and Strategist at Falcon Research Inc. and adjunct professor at the George Washington University Space Policy Institute, 1-15-2019, "Rethinking Requirements and Risk in the New Space Age," Center for a New American Security, https://www.cnas.org/publications/reports/rethinking-requirements-and-risk-in-the-new-space-age

Unfortunately, these variances in models between the MDAP’s lengthy development cycle and the commercial space sector’s 18-month innovation cycle are a result of stark differences in thinking about requirements and risk. Requirements and risk for MDAPs commonly focus on ensuring critical mission capabilities at a given cost. In contrast, the commercial space sector tends to focus more on providing innovation quickly using economies of scale. The commercial sector understands that time dynamically shapes decisions related to requirements and risk **because of the relatively short innovation cycle**. **In a highly competitive space sector with tight profit margins, those unable to innovate quickly will likely be out of business soon**. Alternatively, space systems with mission assurance requirements – where failures are detrimental to national security and military operations – often drive DoD’s timelines. Program managers of critical national security space systems commonly require additional time to test and verify that satellites can perform missions with a very low probability of failure.

#### **Tech innovation solves every existential threat – cumulative extinction events outweigh the aff**

Dylan **Matthews 18**. Co-founder of Vox, citing Nick Beckstead @ Rutgers University. 10-26-2018. "How to help people millions of years from now." Vox. https://www.vox.com/future-perfect/2018/10/26/18023366/far-future-effective-altruism-existential-risk-doing-good

If you care about improving human lives, you should overwhelmingly care about those quadrillions of lives rather than the comparatively small number of people alive today. The 7.6 billion people now living, after all, amount to less than 0.003 percent of the population that will live in the **future**. It’s reasonable to suggest that those **quadrillions** of future people have, accordingly, **hundreds of thousands of times** more moral weight than those of us living here **today** do. That’s the basic argument behind Nick Beckstead’s 2013 Rutgers philosophy dissertation, “On the overwhelming importance of shaping the far future.” It’s a glorious mindfuck of a thesis, not least because Beckstead shows very convincingly that this is a conclusion any plausible moral view would reach. It’s not just something that weird utilitarians have to deal with. And Beckstead, to his considerable credit, walks the walk on this. He works at the Open Philanthropy Project on grants relating to the far future and runs a charitable fund for donors who want to prioritize the far future. And arguments from him and others have turned “long-termism” into a very vibrant, important strand of the effective altruism community. But what does prioritizing the far future even mean? The most **literal** thing it could mean is preventing human **extinction**, to ensure that the species persists as long as possible. For the long-term-focused effective altruists I know, that typically means identifying concrete threats to humanity’s continued existence — like unfriendly artificial intelligence, or a pandemic, or global warming/out of control geoengineering — and engaging in activities to prevent that specific eventuality. But in a set of slides he made in 2013, Beckstead makes a compelling case that while that’s certainly **part** of what caring about the far future entails, approaches that address **specific threats** to humanity (which he calls “**targeted**” approaches to the far future) have to **complement** “**broad**” approaches, where instead of trying to **predict** what’s going to kill us all, you just **generally try to keep civilization running as best it can**, so that it is, as a whole, well-equipped to deal with **potential** extinction events in the **future**, not just in 2030 or 2040 but in 3500 or 95000 or even 37 million. In other words, caring about the far future **doesn’t mean just paying attention to low-probability risks of total annihilation**; it also means **acting on pressing needs now**. For example: We’re going to be **better prepared** to prevent extinction from **AI** or a **supervirus** or **global warming** if society as a whole makes **a lot of scientific progress**. And a significant bottleneck there is that the vast majority of humanity doesn’t get high-enough-quality education to engage in scientific research, if they want to, which reduces the odds that we have enough trained scientists to come up with the breakthroughs we need as a civilization to survive and thrive. So maybe one of the **best thing**s we can do for the **far future** is to improve school systems — here and now — to harness the group economist Raj Chetty calls “lost Einsteins” (**potential innovators** who are thwarted by poverty and inequality in rich countries) and, more importantly, the hundreds of millions of kids in developing countries dealing with even worse education systems than those in depressed communities in the rich world. What if living ethically for the far future means living ethically now? Beckstead mentions some other broad, or very broad, ideas (these are all his descriptions): Help make computers faster so that people everywhere can work more efficiently Change intellectual property law so that technological innovation can happen more quickly Advocate for open borders so that people from poorly governed countries can move to better-governed countries and be more productive Meta-research: improve **incentives** and **norms** in **academic work** to better advance human knowledge Improve education Advocate for political party X to make future people have values more like political party X ”If you look at these areas (economic growth and technological progress, access to information, individual capability, social coordination, motives) a lot of everyday good works contribute,” Beckstead writes. “An implication of this is that a lot of everyday good works are good from a broad perspective, even though hardly anyone thinks explicitly in terms of far future standards.” Look at those examples again: It’s just a list of what normal altruistically motivated people, not effective altruism folks, generally do. Charities in the US love talking about the lost opportunities for innovation that poverty creates. Lots of smart people who want to make a difference become scientists, or try to work as teachers or on improving education policy, and lord knows there are plenty of people who become political party operatives out of a conviction that the moral consequences of the party’s platform are good. All of which is to say: Maybe effective altruists aren’t that special, or at least maybe we don’t have access to that many specific and weird conclusions about how best to help the world. If the far future is what matters, and generally trying to make the world work better is among the best ways to help the far future, then effective altruism just becomes plain ol’ do-goodery.\*

# **Debris PIC**

#### **CP: The appropriation of outer space by private entities is unjust in all instances except if there is Active Debris Removal.**

#### **Active debris removal is not appropriation since it requires private ownership of the debris within space and the regions that the technology operates in**

#### **Governments ought to permit the appropriation of outer space for designated safety zones and tech stationing for active debris removal by private entities.**

#### **Debris removal is necessary and only private entities have the incentive and capability to do it.**

**Giordano 21,** (David Giordano is the Vice President of Mentorship for CBLA. Elsewhere at Columbia Law School, he serves on the Columbia Journal of Transnational Law, and is the Treasurer of Columbia OutLaws. During his 1L Summer, David was an intern at the Securities and Exchange Commission’s Division of Corporation Finance. Prior to law school, David worked as a Corporate Paralegal at the New York office of Cleary Gottlieb Steen & Hamilton LLP. David attended The George Washington University where he obtained a B.A. in psychology. “Space Debris: Another Frontier in the Commercialization of Space”. October 31, 2021.)

As **satellites** and other projectiles blast into orbit, upon collision they **can disintegrate into** shards, sometimes just centimeters wide, that remain in orbit, risking further collision. Hollywood captured the potential perils of **fairly large pieces of space debris** in the opening minutes of the 2013 film [*Gravity*](https://www.warnerbros.com/movies/gravity), where space junk threatens the lives of astronauts on a mission. Outside the realms of fictional space-thrillers, **even the smallest pieces of space junk can present real danger**. In 2016, a tiny piece of **space junk**, believed to be a paint chip or a piece of metal no more than a few thousandths of a millimeter across, [cracked the window of the International Space Station](https://www.popsci.com/paint-chip-likely-caused-window-damage-on-space-station/). In May 2021, a piece of space **debris** [punctured](https://www.nbcnews.com/science/space/space-junk-damages-international-space-stations-robotic-arm-rcna1067) **the robotic arm of the I**nternational **S**pace **S**tation. This is seriously concerning, as, [according to the European Space Agency](https://www.esa.int/Safety_Security/Clean_Space/How_many_space_debris_objects_are_currently_in_orbit), there are 670,000 pieces of space debris larger than 1cm and 170,000,000 between 1mm and 1cm in width. Unfortunately, **public action and policy struggles to keep up with these risks**. International law affords little clarity on the problem, as its control is a novel, [emerging field](https://www.technologyreview.com/2021/08/23/1032386/space-traffic-maritime-law-ruth-stilwell/) with many technical [tracking](https://www.space.com/space-situational-awareness-house-hearing-february-2020.html) and [removal](https://www.scientificamerican.com/article/space-junk-removal-is-not-going-smoothly/#:~:text=There%20is%20no%20doubt%20that,antisatellite%20weapon%2C%E2%80%9D%20she%20says.) challenges. **None of the existing space treaties** [directly tackle the issue](https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-70), rendering [responsibility for it](https://scholarship.law.upenn.edu/jil/vol41/iss1/6/) ambiguous. Absent such responsibility, [legal incentives are non-existent](https://www.courthousenews.com/lack-of-space-law-complicates-growing-debris-problem/)**.** [Guidelines are occasionally issued](https://www.unoosa.org/pdf/limited/l/AC105_2014_CRP14E.pdf) by international governing bodies, but provide little legal significance and are [more targeted at the practicalities of tracking and removal](https://scholarship.law.upenn.edu/jil/vol41/iss1/6/). The nation best positioned to notify space actors of collision risks is the United States, and the burden of that task currently falls on the [Department of Defense](https://www.govexec.com/media/d1-mission-space.pdf). However, the Trump administration issued a [directive in 2018](https://www.cnbc.com/2018/06/18/national-space-council-trump-signs-space-debris-directive.html), shifting the responsibility from the DoD to the Department of Commerce, and the [transition has yet to materialize](https://www.govexec.com/media/d1-mission-space.pdf), leaving DoD struggling to keep pace [with increasing commercial activity](https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/look-out-below-what-will-happen-to-the-space-debris-in-orbit). In the face of public paralysis, **addressing the problem through industry looks more and more attractive.** This has led some to call for a new legal order that still leaves room for government, but reframes who the rules exist to serve. Rather than our current, rudimentary treaty regime designed to [prevent international conflict](https://www.theverge.com/2017/1/27/14398492/outer-space-treaty-50-anniversary-exploration-guidelines), [commentators](https://space.nss.org/wp-content/uploads/NSS-Position-Paper-Space-Debris-Removal-2019.pdf) have called for an additional regime resembling [maritime law](https://www.technologyreview.com/2021/08/23/1032386/space-traffic-maritime-law-ruth-stilwell/) that preserves the interests of a more diverse set of stakeholders, including those in the future that can bring technology and interests to space that may not yet exist. These commentators shun the common conception that space regulation should resemble air-traffic control, which is suited to a narrower set of uses (transport). Under such a “maritime” regime, the light touch of central regulatory bodies, and perhaps their non-existence, is preferred, just as it has been on the seas. This way, individual nations have a degree of flexibility in instituting controls they see fit while leaving room for industry to address problems and introduce new uses for space. Furthermore, **governments seem ready and willing to construct the legal and incentive framework in concert with such private action.** [In a joint statement this summer](https://www.gov.uk/government/news/g7-nations-commit-to-the-safe-and-sustainable-use-of-space), **G7 members expressed openness to resolving** the technical aspects of the **debris** problem **with private institutions, and there is** some **promising progress**. Apple co-founder [Steve Wozniak](https://www.space.com/apple-cofounder-steve-wozniak-space-junk-company) signaled his plans to address the problem through a new company with a telling name: Privateer Space. **Astroscale**, a UK-based company, successfully **launched a pair of satellites** in the Spring of 2021 [that will remove certain space debris from orbit](https://astroscale.com/astroscale-celebrates-successful-launch-of-elsa-d/)**.** Astroscale also [stated their desire](https://astroscale.com/space-sustainability/) to work with governments and international governing bodies to craft policy with private efforts to control the problem top of mind. In light of public policy’s silence on space debris, the initiative of actors like Astroscale involving themselves in policy may be advised, as it could [promote further private investment](https://docs.google.com/document/d/1NCO5Vvjf-kgoZLNfgaOn4bDj_CAfyD1Qhz2oW3TrcHc/edit) in technology for space **debris removal**. A popular [policy recommendation](https://reason.org/policy-brief/u-s-space-traffic-management-and-orbital-debris-policy/) among experts is the establishment of public-private partnerships, and Astroscale has entered several such agreements including with [Japan](https://www.satellitetoday.com/in-space-services/2021/07/27/space-clean-up-company-astroscale-signs-partnerships-with-mhi-and-japanese-government/) and the [European Space Agency](https://spacenews.com/astroscale-clearspace-aim-to-make-a-bundle-removing-debris/). Other **actors include** [ClearSpace](https://www.space.com/esa-startup-clearspace-debris-removal-2025)**,** [OneWeb](https://www.hou.usra.edu/meetings/orbitaldebris2019/orbital2019paper/pdf/6077.pdf)**, and** [D-Orbit](https://www.satellitetoday.com/in-space-services/2021/09/10/esa-awards-d-orbit-uk-contract-for-debris-removal-demonstration/)**.** Some may want to push back against further private involvement. The congestion of space is, in part, industry’s fault, and if we conceptualize orbital space as a common resource, it might be right to fear the effects of the [Tragedy of the Commons](https://www.britannica.com/science/tragedy-of-the-commons). Critics may seek to bolster international treaties, give legal teeth to the guidelines occasionally issued by the UN, and preserve the public posture of the heavens. These may be welcome adjustments, but unlike a pond that industry overfishes or a well that industry dries up, here industry is working to add more fish and water. Moreover, governments stand to benefit from this private decluttering, as well, as [they are expected](https://astroscale.com/wp-content/uploads/2020/02/Reg-V-Development-of-Global-Policy-for-Active-Debris-Removal-Services-v2.0.pdf) to be major customers of some of these private actors. As for the public posture, space has long been a commercial place. Telecommunications companies and government contractors historically depend on space. As the number of commercial satellites set to launch skyrockets, it seems natural to craft policies that are responsive to their interests and provide incentives to remedy issues created in the course of spacefaring, such as space debris. **In light of the** long silence of international law on such issues and the demonstrated **motivation by private actors**, **space debris represents the latest frontier in the abdication of space from the public concern to the private.**

#### **Satellite takeout prompts nuclear response.**

**Acton ’18** [(James; 2/5/8; Co-Director of the Nuclear Policy Program at the Carnegie Endowment for International Peace; CEIP, “COMMAND AND CONTROL IN THE NUCLEAR POSTURE REVIEW: RIGHT PROBLEM, WRONG SOLUTION,” <https://warontherocks.com/2018/02/command-and-control-in-the-nuclear-posture-review-right-problem-wrong-solution/>)]

This threat marks a significant — and unwelcome — departure for U.S. declaratory policy. To the best of this author’s knowledge, the United States has **never before** explicitly threatened a nuclear response to nonnuclear attacks on command, control, and warning capabilities — and with good reason. Such a response would be utterly disproportionate. The Nuclear Posture Review’s threat to carry it out, therefore, lacks credibility and could prove both ineffective and damaging to U.S. interests. Instead, the United States should focus on building a much more redundant command, control, and warning architecture — something that current plans appear unlikely to achieve. Nonnuclear attacks against nuclear command and control are a relatively new danger. During the Cold War, the only way to target an adversary’s command, control, and warning capabilities was generally with nuclear weapons. Today, however, nonnuclear threats to these assets are all too real given recent advances in cyber, high-precision conventional, and anti-satellite weapons. To make matters worse, U.S. command, control, and warning capabilities are surprisingly **fragile**. Once legacy systems are phased out, the United States will rely on **just six satellites** for detecting an incoming nuclear attack and **four satellites** for communicating with nuclear forces. A handful of ground-based assets (and, in the case of communications, aircraft) provide backup. **Nonnuclear** threats to satellites are particularly concerning. Russia is developing ground-based lasers to target U.S. early-warning satellites. Chinese strategists go a step further and specifically advocate attacking such satellites in a conventional conflict. Even limited attacks could have severe consequences. In 2014, for example, Gen. William Shelton, then Commander of U.S. Space Command, publicly acknowledged that the loss of a **single U.S. early-warning satellite** could deprive the United States of the ability to continuously monitor all potential launches of adversaries’ nuclear-armed missiles. If U.S. command, control, and warning capabilities had no other functions, there would be some logic to responding to attacks on them with nuclear weapons. In that case, the only reason an adversary — most likely Russia or China — would have to attack these capabilities would be to prepare to use nuclear weapons on the United States. Specifically, Russian and Chinese strikes — probably conducted with nonnuclear weapons — could make a follow-up nuclear attack more effective and perhaps delay a U.S. nuclear response. In such a scenario, it might make sense for the United States to respond with nuclear weapons. In fact, however, many American command, control, and warning capabilities are dual-use; they serve both conventional and nuclear missions. U.S. early-warning satellites, for example, are tasked with detecting an incoming nuclear attack and with triggering defenses designed to intercept nonnuclear ballistic missiles. This duality could give Russia or China a reason to attack them in a conventional war. For instance, if U.S. missile defenses in Europe or Asia were proving effective in knocking the enemy’s nonnuclear ballistic missiles out of the sky, Moscow or Beijing might try to stave off defeat by attacking U.S. early-warning satellites with nonnuclear weapons. Then, according to the new U.S. nuclear doctrine, the United States could launch a nuclear response. Using nuclear weapons in this scenario would, however, violate any notion of proportionality. Russian or Chinese nonnuclear strikes on U.S. **satellites** would almost certainly cause no human casualties. Yet U.S. nuclear use — even if highly limited and carefully targeted — could **spark a nuclear war** that might plausibly kill tens or even hundreds of millions, including many in the United States. So, would the U.S. president really risk a devastating nuclear conflict in response to bloodless Russian or Chinese attacks on U.S. satellites? Only Donald Trump can know the answer to this question, but it is not difficult to see why Moscow and Beijing might assume it is “no” and, in the event of a conflict, attack U.S. command, control, and warning capabilities anyway. In this case, the president would be left with a profoundly awful choice: refrain and raise doubts about the credibility of other U.S. nuclear threats, or act on the threat to use nuclear weapons and risk mass slaughter? Fortunately, there are better ways to deal with the very real problem of the vulnerability of command and control to nonnuclear attack. The most obvious approach would be for the United States to separate nuclear command, control, and warning capabilities from nonnuclear ones. While superficially attractive, this idea would encounter severe difficulties in practice. The cost of building two separate command-and-control systems — one for nuclear and one for nonnuclear operations — would be a real barrier. More subtly, the advent of dual-capable missiles — those that can accommodate a nuclear or nonnuclear warhead — could make it impossible to determine how an incoming weapon is armed, effectively preventing so-called disaggregation. A better way would be for the United States to start building a much more **resilient** command, control, and warning architecture. Unfortunately, **current** modernization plans are **unlikely** to achieve that goal. Much to the chagrin of Gen. John Hyten, another former commander of U.S. Space Command and the current commander of U.S. Strategic Command, plans to modernize the U.S. space-based early-warning system essentially call for replicating the current architecture with newer satellites. These plans will likely do very little to reduce the vulnerability of early-warning satellites to nonnuclear attack.

#### **It causes extinction**

**Rogoway 15** [Tyler; November 12; Defense Journalist and Editor of Time Inc’s The War Zone; Jalopnik, “These Are The Doomsday Satellites That Detected The Explosion Of Metrojet 9268,” <https://foxtrotalpha.jalopnik.com/these-are-the-doomsday-satellites-that-detected-the-exp-1737434876>]

For over 50 years the Pentagon has had early **warning satellites** in orbit aimed at **spotting launches** of ballistic missiles, especially the big **intercontinental kind** that can fly around the globe in less than 30 minutes and bring about **nuclear Armageddon**. Recently, these satellites have made news for their “secondary capabilities,” spotting the downing of Metrojet Flight 9268 and Malaysian Airlines Flight 17. These are the shadowy satellites that are capable of such amazing feats, and an idea of how they work. In 1960, at the height of the Cold War and at the dawn of the space age, the first Missile Defense Alarm System (MiDAS) satellite was launched into low earth orbit. Six years later there was a constellation of nine of these satellites roaming the heavens, each scanning the Soviet Union for large infrared plumes, the tell-tale sign of a **ballistic missile** or **rocket launch**. These fairly crude, low-earth orbit satellites, along with the radar-based Ballistic Missile Early Warning System, would be the basis for a Cold War ballistic missile surveillance system that would become ever more complex and capable as the years went by. If ballistic missile **launches were detected** and deemed a threat, the **decision to retaliate** would mean the National Command Authority making the call to do so **within half an hour**, an act that could bring an the **end of humanity’s** reign on Earth, permanently. The first really reliable and full coverage space-based ballistic missile early warning capability came with the launch of the first Defense Support Program (DSP) satellite in 1970. These new satellites were much more capable than their MiDAS predecessors. Early DSP satellite design was relatively straight forward, with the satellites’ spinning around their center axis while in geosynchronous orbit. This allows their telescopic infrared sensor to continuously sweep an area of the planet in a relatively brief amount of time, around six times in one minute. If something were detected, the information would **immediately** be **data-linked** to controllers on the ground at the 460th Space Wing located at Buckley AFB in in Colorado. A total of 23 of these satellites have been launched over the program’s life, with constant upgrades made along the way. A DSP satellite was launched by the Space Shuttle on STS-44 in 1991, and the last one was launched by a Delta IV Heavy in 2007. Most famously, the Defense Support Program constellation of satellites were used to **detect launches** of **SCUD missiles** during Operation Desert Storm.