

In this debate, I affirm the following:

Resolved: The appropriation of outer space by private entities is unjust.

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**Value:** My value is the mitigation of existential threat, because it is the most just thing possible

**Criteria:** My criteria is Rule Utilitarianism which means doing the greatest good for the greatest number of people, without violating the standards set forth by the UDHR (universal declaration of human rights)” - john stuart mill

### **A: Definition of Appropriation**

**“Appropriation of outer space” by private entities refers to the exercise of exclusive control of space – private entities can no longer exclusively act in space – they must act alongside public entities**

**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.<sup>214</sup> The ITU has, quite blatantly, created something akin to “**property interests in outer space.**”<sup>215</sup> It allows nations to exclude others from their orbital slots, even when the nation is not currently using that slot.<sup>216</sup> This **is directly in line with at least one definition of outer-space appropriation.**<sup>217</sup> **[\*\*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.<sup>218</sup> In some aspects, this seems to effect exactly what those signatory nations of the Bogotá Declaration were trying to accomplish, albeit through different means.<sup>219</sup>

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## **1) Space Mining**

### **A: Private Space Mining and Ownership allowed now**

**Williams 20** [(Matt Williams, Reporter) “Trump signs an executive order allowing mining the moon and asteroids,” Phys Org, April 13, 2020, <https://phys.org/news/2020-04-trump-moon-asteroids.html>] TDI

**Trump** signs an executive order allowing mining the moon **and** asteroids In 2015, the **Obama** administration **signed** the U.S. Commercial Space Launch Competitiveness Act (CSLCA, or H.R. 2262) into law. This bill was intended to “facilitate a pro-growth environment for the developing commercial space industry” by **making it legal** for American companies and citizens to own and sell

resources **that they extract from asteroids and off-world locations** (like the moon, Mars or beyond). On April 6th, the Trump administration **took things a step further** by signing an executive order that formally **recognizes the rights of private interests to claim resources in space**. This order, titled "Encouraging International Support for the Recovery and Use of Space Resources," effectively ends the decades-long debate that began with the signing of the Outer Space Treaty in 1967.

## **B: New Investments coming and companies are launching - economic incentives make it alluring**

**Tosar 20** [(Borja Tosar, reporter) "Asteroid Mining: A New Space Race," OpenMind BBVA, May 18, 2020, <https://www.bbvaopenmind.com/en/science/physics/asteroid-mining-a-new-space-race/>] TDI

This is not science fiction. There are now **space mining companies**, such as Planetary Resources, which has **already launched several mini-satellites to test several of its patents**. Other companies like Asteroid Mining Corporation or Trans Astronautica Corporation, although still far from their goal, are already **attracting millions of dollars of private investment** **i**nterested in being on the front line of a possible future space business. Is asteroid mining possible? This new space race already began back when **the Hayabusa missions successfully returned a few grams of an asteroid's regolith**, so **the technology to harvest asteroid material exists**, **we just have to change the scale**. **It is no longer a technological problem**. Is it economically viable? We are increasingly dependent on rare elements (such as those in the palladium group), which are expensive to exploit on Earth and come with a high environmental cost, so the sum of these two factors could make it profitable to travel to the asteroids to extract these raw materials. Astrophysicist Neil deGrasse argues that **the planet's first trillionaire will undoubtedly be a space miner**.

## **C: Mining spikes the risk of satellite-dust collisions**

**Scoles 15** [(Sarah Scoles, freelance science writer, contributor at Wired and Popular Science, author of the books Making Contact and They Are Already Here) "Dust from asteroid mining spells danger for satellites," New Scientist, May 27, 2015, <https://www.newscientist.com/article/mg22630235-100-dust-from-asteroid-mining-spells-danger-for-satellites/>] TDI

Study this is citing – Javier Roa, Space Dynamic Group, Applied Physics Department, Technical University of Madrid. Casey J Handmer, Theoretical Astrophysics, California Institute of Technology. Both PhD Candidates. "Quantifying hazards: asteroid disruption in lunar distant retrograde orbits," arXiv, Cornell University, May 14, 2015, <https://arxiv.org/pdf/1505.03800.pdf>

NASA chose the second option for its Asteroid Redirect Mission, which aims to **pluck a boulder from an asteroid's surface** and relocate it to a stable orbit around the moon. But **an asteroid's gravity is so weak that it's not hard for surface particles to escape into space**. Now a **new model warns that debris shed by such transplanted rocks could intrude where many defense and communication satellites live** – in geosynchronous orbit. According to Casey Handmer of the California Institute of Technology in Pasadena and Javier Roa of the Technical University of Madrid in Spain, **5 percent of the escaped debris will end up in regions traversed by satellites**. Over 10 years, it would **cross geosynchronous orbit 63 times** on average. **A satellite in the wrong spot at the wrong time will suffer a damaging high-speed collision with that dust**. The study also looks at the "catastrophic disruption" of an asteroid 5 metres across or bigger. Its total break-up into a pile of rubble would increase the risk to satellites by more than 30 per cent ([arxiv.org/abs/1505.03800](https://arxiv.org/abs/1505.03800)).

## **D: Losing satellites poses several risks**

**Hollingham 13** (Richard Hollingham, British Broadcasting Corporation. June 9. 2013.

<https://www.bbc.com/future/article/20130609-the-day-without-satellites>)

We may not always realise it, but we depend on space technology orbiting the Earth. So what would happen if it all stopped working? At a recent international conference on “space hazards”, I listened to a series of speakers outline doomsday scenarios. These included a massive solar storm disrupting satellite communications, a cyber attack partially disabling the GPS system, and debris knocking out

Earth-monitoring satellites. Threats to this space infrastructure are real, and governments around the world are beginning to think seriously about improving the resilience of the systems we rely on. To focus their thoughts, and with a nod to that pioneer of threats from space, Orson Welles, here is what might happen if we suddenly encountered a day without satellites...

08:00 There was nothing sudden. Planes did not fall out of the sky, the lights didn’t go out or the water supplies fail. At least, not at first. Some things did stop working straightaway but, for most people, they were more an inconvenience than anything else. The loss of television satellites meant that many families missed the cheery rehearsed smiles of breakfast TV presenters, and were forced to talk to each other over their cereal instead. There were no foreign correspondents on the radio, no results of the latest international sports fixtures. But outside, the loss of global satellite communications was putting the world in danger. At a bunker somewhere in the United States, a pilot squadron lost contact with the armed drones they were flying over the Middle East. The failure of secure satellite communications systems left soldiers, ships and aircraft cut off from their commanders and vulnerable to attack. Without satellites, world leaders struggled to talk to each other to diffuse mounting global tensions. Meanwhile, over the Atlantic, thousands of passengers watched movies, oblivious to the difficulties on the flight deck as pilots struggled to talk to air traffic control. **Without satellite**

**phones, container ships in the Arctic, fishermen in the China Sea and aid workers in the Sahara found themselves isolated from the rest of the world**. As people started work in their offices in Tokyo, Shanghai, Moscow, London and New York, they found it difficult to talk to colleagues in other countries. Email worked and the internet seemed okay, but many international phone calls failed. The rapid communications systems that tied the world together were unravelling. Rather than shrinking, it seemed as if the Earth was getting larger. 11:00 As presidents and prime ministers gathered their crisis

teams, a new threat to global stability began to emerge: the loss of the Global Positioning System (GPS). As far as most of us were concerned, GPS helped us travel from A to B without getting hopelessly lost along the way. It had transformed the lives of delivery companies, helped emergency services reach incidents much quicker, allowed planes to land on isolated runways and enabled trucks, trains, ships and cars to be tracked and traced. But GPS turned out to be much more pervasive in our lives than many of us could possibly have realised.

**GPS satellites are little more than highly accurate atomic clocks in space**, transmitting a time signal back to Earth. Receivers on the ground – in your car or smartphone for instance – pick up these time signals from three or more satellites. By comparing the time signal from space with the time in the receiver – the receiver can calculate how far away the satellite is. But there are plenty of other uses for these accurate time signals from space. Uses that, it emerged, our society had become increasingly reliant on.

**Our infrastructure is held together by time – from time stamps on complex financial transactions to the protocols that hold the internet together. When the packets of data passing between computers get out of sync, the system starts to break down. Without accurate time, every network controlled by computers is at risk. Which means almost everything**. When the GPS signals stopped, back-up systems (employing accurate clocks on the ground) kicked in. But, within a few hours, time had started to slip. A fraction of a second in Europe,

compared to the US; a tiny difference between India and Australia. **The cloud began to fail, web searches became slower, the internet started to grind to a halt**. The first power cuts came later in the evening, as transmission

networks struggled to balance demand. At computerised water treatment works, engineers switched to manual back-up systems. **In major cities, traffic lights and railway signals defaulted to red, bringing transport to a standstill. Mobile phone services, already patchy, finally failed in the late afternoon**.

16:00 By this time, aviation authorities reluctantly decided to ground commercial aircraft. **The loss of satellite communications and GPS had already seen a majority of flights cancelled**, but it was a more mundane failure that proved to be the final straw: the weather. Although meteorological balloons, ground and ship observations were still important, forecasting had become

**increasingly reliable and reliant on satellites**. Retailers used weather data to order the right foods – no point in stocking up on meats for the barbeque if the outlook was gloomy. Farmers relied on forecasts for planting, spraying and harvesting. The aviation industry needed forecasts to make decisions that would affect the lives of passengers. Aircraft are fitted with radar to detect bad weather or other sources of turbulence, but they take note of constant updates from the ground. These “nowcasts” allow them to keep track of weather patterns developing and act accordingly. These are particularly important over the oceans, where observations from ships are sparse. If passengers on trans-Atlantic

flights had known this, then they would have thought twice before boarding. Without weather satellite data, a storm system developing rapidly over the ocean was missed and the aircraft flew straight into it. The severe turbulence experienced by passengers left several injured and the remainder badly traumatised by the experience. But at least they got to complete their journey. Around the world, other travellers were stranded thousands of miles from home. 22:00 By now, the full impact of what would become known as “the day without satellites” had become apparent. Communications, transport, power and computer systems had been severely disrupted. Global business had ground to a halt and governments were struggling to cope. Politicians were warned that food supply chains would soon break down. With fears of a breakdown in public order, governments introduced emergency measures. If the disruption continued then each day would bring new challenges. There would be no more satellite data showing the health of crops, illegal logging in the Amazon or Arctic ice cover. Satellites used to produce images and maps for rescue workers responding to disasters would be missed, as would the satellites producing long-term records of climate. It was a tribute to the space industry that we could take all this for granted, but it was only when the satellites were lost that anyone noticed... So, could all this happen? Only if everything failed at once, and that is unlikely. What is certain is that the infrastructure we all rely on has become increasingly dependent on space technology. And that without satellites, the world would be a very different place.

## 1) Russia Scenario

**A: Since 1975 and through multiple terrestrial crises, including the last ukraine invasion 8 years ago, US-Russo Space coop has remained sacrosanct. Private appropriation of Outer space will bring this to an end.**

**CSIS 18** [(Center for Strategic and International Studies), “Why Human Space Exploration Matters,” August 21, 2018 <https://www.csis.org/blogs/post-soviet-post/space-cooperation>] TDI

With all the talk of high-tech Russian super-missiles and Trump’s addition of Space Force as a new military branch, it is easy to forget that the US and Russia having been working closely together in space ever since the joint Apollo-Soyuz mission in 1975—even as the overall relationship has become more adversarial. The U.S. and Russia share training, communications, operational capabilities and expenses in support of the International Space Station (ISS), and following the cancellation of the U.S. Space Shuttle Program in 2011, the United States continues to rely on Russia’s Soyuz capsules for transport to the ISS. But three **recent developments threaten to undo even this area of remaining U.S.-Russia cooperation: the privatization of space exploration in the US**, signs of the weaponization of space by both countries, and the phasing out of ISS. Despite these developments, and even as both countries’ programs turn more inward-looking, small steps can be taken to safeguard a degree of **U.S.-Russia cooperation in space**. This **would be in both countries’ national interest, and can provide a small buffer to the relationship as a whole.**

U.S.-Russian space cooperation continues to be a stated mutual goal. In April 2018, **President Putin said of space, “Thank God, this field of activity is not being influenced by problems in politics.** Therefore, I hope that everything will develop, since it is in the interests of everyone... **This is a sphere that unites people.** I hope it will continue to be this way.”

During his statement at a recent event at CSIS, NASA Administrator Jim Bridenstine said, **“[space] is our best opportunity to dialogue when everything else falls apart. We’ve got American astronauts and Russian cosmonauts dependent on each other on the International Space Station, which enables us to ultimately maintain that dialogue.”** The U.S. and Russia both benefit from the ISS partnership. Russia provides transportation to the ISS for U.S. astronauts, from which Russia receives an average of \$81 million per seat on the Soyuz (and recognition of its status as a space power). The U.S. also benefits from Russia’s technical contributions to the ISS while Russia benefits. The U.S. and Russia signed a joint statement in 2017 in support of the idea of collaborating on deep space exploration, including the construction of the Lunar Orbital Platform-Gateway, a

research-focused space station orbiting the moon. Through agreements on civilian space exploration, such as the Lunar Orbital Platform-Gateway or future Mars projects, that have clear benefits to both sides, some degree of cooperation will remain in both countries' interest. **The high price tag** for pursuing space exploration alone and opportunities **for** sharing and receiving technical **expertise encourages international partnerships like the ISS.** However, at least three factors, apart from the overall deterioration of U.S.-Russia relations, threaten this cooperation. First, growth of the private sector space industry may alter the economic arrangement between the U.S. and Russia, and ultimately lower the benefits of cooperation to both countries. The development of advanced technologies by private companies will give NASA new options to choose from and reduce the need to depend on (and negotiate with) Russia. **If NASA and its Russian counterpart, Roskosmos, have no need to talk with one another, they probably won't in the face of tense political relations. The U.S. intends to use Boeing and SpaceX capsules for human spaceflight** beginning in 2020, and a Congressional **plan** in 2016 set a phase out date of Russian RD-180 rocket engines by 2022. Second, the seeming emergence of space as a new domain of warfare in U.S. and Russian national security and defense doctrine could make cooperation with a potential adversary too risky. The **2018 National Defense Strategy** characterizes "space and cyberspace as warfighting domains." **Russia's 2010 military doctrine stated that ensuring superiority in space is "decisive factor" in achieving its strategic goals.** The 1967 **Outer Space Treaty** that spacefaring countries signed prohibits the installation and use of weapons of mass destruction in space but does not expressly prohibit conventional weapons or discuss the destruction of satellites. As more and more critical infrastructure and lives rely on the internet, countries are becoming increasingly concerned about the security of satellites. One country's attempts to protect their space assets with space-based weapons may spook others into building up their own capabilities in a high-tech example of the classic security dilemma. This would increase the tense security environment, impeding incentives for technology or capability sharing in space partnerships.

## **B: For the past 8 years, Ukraine has been a powderkeg; the situation is deteriorating this week.**

**Shear Friday** - (Michael D. Shear is a White House correspondent and two-time Pulitzer Prize winning reporter in the Washington bureau, where he covers President Biden, with a focus on domestic policy, the regulatory state and life at 1600 Pennsylvania Avenue. A veteran political correspondent, he has covered the White House for 13 years, including the Trump and Obama presidencies) - "Biden Says Putin Has Decided to Invade Ukraine" - 02/18/22 - new york times

-<https://www.nytimes.com/live/2022/02/18/world/russia-ukraine-biden-putin>

**President Biden** held another round of urgent talks with European leaders on Friday afternoon as the United States and its allies continued to warn that Russia was poised to invade Ukraine and trigger what could be the largest conflict on the continent since World War II. Mr. Biden said after the call with allies that he was convinced that the Russian president, Vladimir V. Putin, had made up his mind to invade within the next week, **citing United States intelligence. "We have reason to believe the Russian forces are planning and intend to attack Ukraine in the coming week, the coming days,"** he said. "We believe that they will target Ukraine's capital Kyiv." Mr. Biden said NATO allies remained united in their support of Ukraine and promised the United States and the European Union would punish Russia with economic sanctions if Russia chose war. He accused Russia of pushing out "more and more disinformation" in recent days intended to paint Ukraine as the aggressors, including "phony allegations" that Ukraine intended a genocide against ethnic Russians and "fabricated claims" that Ukraine intended to launch a major attack on the Donbas region controlled by Russia-backed separatists. "There is simply no evidence to these assertions, and it defies basic logic to believe the Ukrainians would choose this moment, with well over 150,000 troops arrayed on its borders, to escalate a years-long conflict," he said. Tension in the region escalated earlier on Friday as Russian-backed separatists in eastern Ukraine called for a mass evacuation of the area on Friday, claiming Ukraine was about to attack, a dire development that Western officials denounced as Russia's latest attempt to create a pretext for President Vladimir V. Putin to send tens of thousand of troops into Ukraine. A U.S. State Department official, who would only discuss the crisis on the condition of anonymity, said announcements like these are "further attempts to obscure through lies and disinformation that Russia is the aggressor in this conflict." Senior American officials also said for the first time that they believe Russia was responsible for cyberattacks on Ukrainian banks this week. And they warned that they are bracing for possible cyberattacks by Russia on American targets if the United States and its allies impose tough sanctions on Russia. "We've seen troubling signs of malicious cyber activity this month," Anne Neuberger, Deputy National Security Advisor for Cyber and Emerging Technology, said. In a joint statement, the foreign ministries of France and Britain said that they agreed with the assessment on Russia's willingness to stage so-called false flag events. **Mr. Putin insisted on Friday that he was prepared for further diplomacy, but Russian officials said the country's military will conduct drills over the**



**weekend that include the** launch of ballistic and cruise missiles. The **test of the country's nuclear forces** added to the sense of foreboding in the region. "We are ready to go on the negotiating track under the condition that all questions will be considered together, without being separated from Russia's main proposals." Mr. Putin said in a news conference on Friday alongside his close ally President Aleksandr G. Lukashenko of Belarus, who was visiting Moscow.

## **C: Without communication channels the chances for miscalculation, escalation and confrontation between the US and Russia become dangerously high.**

### **\*This can happen through miscalc / accident**

**Walsh 22** - [Bryan Walsh is the editor of Vox's Future Perfect section, overseeing coverage on policies and technologies that will make the future a better place. Previously he worked at Axios as the Future Correspondent, wrote the 2019 book "End Times: A Brief Guide to the End of the World," and worked at TIME magazine for 15 years as a foreign correspondent in Asia, a climate change writer and as the international editor.] - January 21 2022 -

**"What the Doomsday Clock is really counting down to" - Vox.com -**

**<https://www.vox.com/22893594/doomsday-clock-nuclear-war-climate-change-risk>**

A possible **Russian invasion of Ukraine** could realistically result in a conventional ground war fought on European soil, and it **raises the risk of conflict between the US and Russia, which together possess most of the world's remaining nuclear arsenal. Russia has hinted at** the possibility of **deploying nuclear weapons close to the US coastline, which would further reduce the warning time after launch to as little as five minutes,** while Russian media has made claims that the country could somehow prevail in a nuclear conflict with the US. Washington is pursuing a modernization of the US nuclear arsenal that could cost as much as \$1.2 trillion over the next 30 years, while Moscow undertakes its own nuclear update. China is reportedly expanding its own nuclear arsenal in an effort to close the gap with the US and Russia, even as tensions grow over Taiwan. **The risk of a nuclear conflict is "dangerously high,"** Jon B. Wolfsthal, a senior adviser at the anti-nuclear initiative Global Zero and the former senior director for arms control and nonproliferation at the National Security Council, wrote recently in the Washington Post. The result of such a war would be as predictable as it is unthinkable. The heat and shockwave from a single 800-kiloton warhead, which is the yield of most of the warheads in Russia's ICBM arsenal, above a city of 4 million people would likely kill 120,000 people immediately, with more dying in the firestorms and radiation fallout that would follow. **A regional or even global nuclear war would multiply that death toll, collapse global supply chains, and potentially lead to devastating long-term climatic change.** In the worst-case scenario, as **Rutgers University environmental scientist Alan Robock told Vox** in 2018, **"almost everybody on the planet would die."** And unlike the other human-made threats the Doomsday Clock now aims to capture, it could unfold almost instantly — and even by accident. Multiple times during the Cold War technical glitches in the machinery of nuclear defense nearly led the US or the USSR to launch their missiles by mistake, and as the VR simulation demonstrates, the sheer speed of a nuclear crisis leaves very little room for error when the clock is ticking. Moving away from midnight **As long as nuclear weapons exist in significant numbers, they present an existential threat to humanity. Unlike other disruptive technologies like AI or biological engineering, or even the fossil fuels that are the chief driver of climate change, they have no benign side.** They are merely weapons, weapons of unimaginably destructive power, whether or not they inspire the dread they once did. Yet **we've survived the nuclear age so far because we've had the wisdom — and the luck — not to use them since 1945, and** more can be done to ensure that remains the case. Last year the US and Russia extended the New START nuclear weapons treaty, which put limits on the size of each nation's deployed nuclear arsenal, for another five years, pausing the erosion of the post-Cold War arms control regime and giving diplomats more time to negotiate tighter limits in the future. **The US and Russia also agreed to begin new sets of dialogues** on how to better maintain nuclear stability in the future,

and the White House is preparing a Nuclear Posture Review that could see the US specifically pledge not to use nuclear weapons first or in response to a conventional or cyber conflict, which could help reduce the chances of a renewed nuclear arms race. Fifty-nine nations have signed onto an international treaty calling for a global ban on nuclear weapons (though none of the signatories are nuclear powers themselves). While it will reliably continue to be set every year — at least until midnight really does strike — the Doomsday Clock may have outlived its meaning as a symbol of existential risks in a rapidly changing world where the dangers and benefits of new technologies are so co-mingled. But as a warning for the original human-made catastrophic threat, the Doomsday Clock can still tell the time — and it may be later than we think.

## **D: Further, ukraine will suffer almost a half million civilian deaths**

**McKenzie 22** - “Jessica McKenzie is an associate editor at the Bulletin of the Atomic Scientists. Her work has been published in *The New York Times*, *National Geographic*, *Audubon Magazine*, *Backpacker*, *The Counter*, and *Grist*, among other publications, and has won awards or honorable mentions from the Society for Advanced Business Editing and Writing, the North American Agricultural Journalists Writing Awards, and The Newswomen’s Club of New York” - “War has been an environmental disaster for Ukraine” - February 15, 2022 - <https://thebulletin.org/2022/02/war-has-been-an-environmental-disaster-for-ukraine/>

**If Russia embarks on a full-scale invasion of Ukraine**—as military maneuvering suggests it might—**US intelligence officials estimate** that between 25,000 to 50,000 civilians could die. An additional 5,000 to 25,000 Ukrainian soldiers and 3,000 to 10,000 Russian soldiers could also be killed. While the toll on human life would be steep, a full-scale military invasion would also have long-lasting environmental impacts in Ukraine. Russia has amassed a vast array of weapons within striking distance of Ukraine, including tanks, artillery guns, rocket launchers, ballistic missile systems, and infantry fighting vehicles, **according to the Center for Strategic and International Studies**. Russian military forces in the area are more than enough to initiate a large-scale invasion of Ukraine, **according to** Tyson Wetzels, a senior US Air Force fellow at the Atlantic Council’s Scowcroft Center for Strategy and Security. Timing is everything; some observers **have already theorized** that President Vladimir Putin is only waiting for a hard freeze to ease a ground invasion. Moving heavy vehicles over soft or thawing ground would not only be difficult but could tear up sensitive wetlands. One potential invasion route could take Russian military forces through the Chernobyl Exclusion Zone. “The delivery of air-to-surface munitions, artillery, mortar and multiple rocket-launcher fire in the Belarus-Ukraine border area could also disperse radioactive debris in the soil,” Russian military analyst Pavel Felgenhauer **told** the *Washington Post*.