## **Asteroid mining DA**

#### **We are at the brink of extinction through global warming- current emission rates leave us seven years until irreversibility.**

**Hassan ‘20(**Hassan, Jennifer. “How Long until It's Too Late to Save Earth from Climate Disaster? This Clock Is Counting down.” The Washington Post, WP Company, 21 Sept. 2020, [www.washingtonpost.com/climate-environment/2020/09/21/climate-change-metronome-clock-nyc/](http://www.washingtonpost.com/climate-environment/2020/09/21/climate-change-metronome-clock-nyc/).) SJ

How long does the world have left to act before an irreversible climate emergency alters human existence as we know it? A new digital clock unveiled in Manhattan’s Union Square over the weekend promises to tell you — down to the very second. The [Climate Clock](https://climateclock.world/) unveiled by artists Gan Golan and Andrew Boyd warned at 1:30 p.m. Monday that there were 7 years, 101 days, 17 hours, 29 minutes and 22 seconds until Earth’s carbon budget is depleted, based on current emission rates. A total depletion would thrust the world into further turmoil and suffering through more flooding, more wildfires, worsening famine and extensive human displacement, according to the artists. The display, plastered onto the side of a glass building for Climate Week, shows two numbers. The first, displayed in red, is what the creators refer to as a “deadline.” The timer counts down how long it will take for the world to burn through its carbon budget if swift action isn’t taken to keep warming under 1.5 degrees Celsius above preindustrial levels. If Earth’s temperatures increase by 1.5 degrees Celsius, the planet will fall victim to extreme heat waves, fires, droughts and limited water availability, a 2019 NASA report on global climate change [warns](https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter/). Under the Paris agreement, more than 180 countries have pledged to work together to keep Earth’s temperature below a rise of two degrees Celsius (3.6 degrees Fahrenheit) — and if possible, 1.5 degrees. (President Trump announced in November that [the United States was withdrawing from the climate accord](https://www.washingtonpost.com/climate-environment/2019/11/04/trump-makes-it-official-us-will-withdraw-paris-climate-accord/?itid=lk_inline_manual_8).) The clock’s second figure, displayed in green, is labeled a “lifeline.” It tracks the percentage of available energy being supplied from renewable sources. “Simply put, we need to get our lifeline to 100% before our deadline reaches 0,” the clock’s official website notes. The installation, which was unveiled Saturday, replaces the astronomical clock that was first erected at [Metronome](https://www.publicartfund.org/exhibitions/view/metronome/), New York City’s public art wall that was constructed in 1999. The original 60-foot-wide monument at 1 Union Square South was designed by Kristin Jones and Andrew Ginzel, who wanted to explore “the relationship between the city and time,” according to the Public Art Fund website. The string of numbers known as “The Passage” showed how much time had passed since midnight and how much time was left until midnight. But the somewhat peculiar design, with its brickwork, bursts of smoke and perplexing LED display, sparked major confusion over the years, with many unsure as to what the numbers actually represented; some people falsely believed the digits were an indicator of national debt. For Golan and Boyd, the message behind the new numbers is simple: For Earth to survive, carbon emissions must be reduced — and time is running out. “Our planet has a deadline. But we can turn it into a lifeline,” Boyd told The Washington Post on Monday. Golan explained that the idea to create a Climate Clock was inspired by the birth of his first child a week before the United Nations’ Intergovernmental Panel on Climate Change (IPCC) “released its [devastating report](https://www.washingtonpost.com/energy-environment/2018/10/08/world-has-only-years-get-climate-change-under-control-un-scientists-say/?itid=lk_inline_manual_20) on how little remaining time we had left to make progress on climate change, before the catastrophic effects became irreversible.” He added that the arrival of his daughter dramatically changed his view of the world: “What we did in the next few years would determine the world my daughter would live in, that all of us would live in, and I felt that timeline needed to be understood by everyone, everywhere.” [Doomsday Clock is 100 seconds to midnight, the symbolic hour of the apocalypse](https://www.washingtonpost.com/weather/2020/01/23/doomsday-clock/?itid=lk_interstitial_manual_24) This isn’t the first time Golan and Boyd have joined forces to make a statement about global warming. In September 2019, just days before Greta Thunberg addressed the U.N. General Assembly, the teen climate activist asked Boyd and Golan to build her a handheld climate clock. At the time, she said she wanted to show it to the U.N. secretary general — and had found the artists after they had offered to work with the IPCC on a clock to accompany its scathing 2018 climate report. In what they describe as a “lightning-speed effort,” Golan and Boyd pulled together a team of climate science experts, programmers, electrical engineers and designers to create the clock Thunberg wanted — battery-powered and synchronized to the Climate Clock. Thunberg’s bespoke device was hand-delivered to her hotel the night before her speech. She has since carried it around the world on her travels. [Greta Thunberg had one question at the U.N. climate summit: ‘How dare you?’](https://www.washingtonpost.com/climate-environment/2019/09/23/greta-thunberg-vows-that-if-un-doesnt-tackle-climate-change-we-will-never-forgive-you/?itid=lk_interstitial_manual_31) The New York climate clock will be on display until Sept. 27, although the creators say it may one day become a permanent fixture of the Manhattan landscape. The artists are now calling on people to [create](https://climateclock.world/make) their own clocks and say they are working with cities around the world to install their own versions. “Different countries and different communities may have different roles, but we all have to be on the same timeline,” Golan said, calling for “global unity.” While some may draw parallels between the climate clock and the Doomsday Clock — a symbolic timepiece intended to signal how close the world is to ending, based on a variety of threats — Golan insists that there’s a sliver of optimism to be had. “This is not a doomsday clock; the number is not zero. It’s telling us there is still time, but we can’t waste it,” he said. But as the world continues to grapple with the [coronavirus](https://www.washingtonpost.com/health/2020/02/28/what-you-need-know-about-coronavirus/?arc404=true&itid=lk_inline_manual_39) pandemic that has killed nearly 1 million people worldwide, the artists are urging the public not to lose sight of the threat of climate change. Together they hope that the project will remind people to “flatten the climate curve” to protect the planet. As he unveiled the clock Saturday, Golan encouraged onlookers to reflect on their own carbon footprint and to come together to create change. “The world is literally counting on us,” he said. “Every hour, every minute, every second, counts.”

#### **Private entities are key to asteroid mining and fulfilling demand for rare earth elements**

**Britt 21** (Hugo Britt, August 19, 2021, Companies Are Preparing for Space Mining, <https://www.thomasnet.com/insights/companies-are-preparing-for-space-mining/>) SJ

Rare Earth Materials Are Abundant. There are around two million near-earth asteroids brimming with rare earth minerals, precious metals, iron, and nickel. The Moon contains helium-3, yttrium, samarium, and lanthanum, while Mars contains an abundance of magnesium, aluminum, titanium, iron, chromium, and trace amounts of lithium, cobalt, tungsten, and other metals. Importantly, many planetary bodies contain water, which through hydrolysis can be used as rocket fuel. It Helps with Sustainability Earth’s resources are finite. [Non-renewable metal resources are inherently unsustainable](https://www.nature.com/articles/s43247-020-0011-0), and mining causes environmental degradation all over the world. The answer is to source our minerals off-world. Off-world minerals are exhaustible as well, but the argument is that mining lifeless rocks such as the Moon or asteroids is infinitely preferable to continuing to damage Earth’s fragile biosphere. Discoveries May Be Made Opening space to commercial mining does not mean that science takes a back seat. Space-mining interests could drive scientific advancement by discovering extremely rare or unknown minerals on other planetary bodies. Robotics Would Do the Work While countless lives have been lost on Earth over the centuries due to mining accidents and disasters, it is likely that humans will not have to risk their lives by traveling in-person to off-world mining sites. [Regolith-sampling probes](https://www.thomasnet.com/insights/nasa-uses-pogo-stick-probe-to-retrieve-sample-from-asteroid-that-may-one-day-hit-earth/) are already in use and provide an early glimpse of what a scaled-up robotic mining craft may one day look like. Off-Earth Mining and Space Law The [1967 Outer Space Treaty](https://www.thomasnet.com/insights/is-the-outer-space-treaty-outdated/) is unclear in terms of whether any country — or private company — can claim mineral rights in space. It states that “exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind.” The [1979 Moon Treaty](https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html) was an attempt to declare the Moon and its natural resources to be CHM (Common Heritage of Mankind). Significantly, it called for “an equitable sharing [by all countries] in the benefits derived from these resources.” Most nations, including the U.S., did not ratify this treaty. Recently, the U.S. has accelerated its efforts to create a legal framework for the exploitation of resources in space. The Obama administration signed the [U.S. Commercial Space Launch Competitiveness Act of 2015](https://www.faa.gov/about/office_org/headquarters_offices/ast/media/US-Commercial-Space-Launch-Competitiveness-Act-2015.pdf), allowing U.S. citizens to “engage in the commercial exploration and exploitation of space resources.” In April 2020, the Trump administration issued an [executive order](https://www.space.com/trump-moon-mining-space-resources-executive-order.html) supporting U.S. mining on the Moon and asteroids. In May 2020, NASA unveiled the [Artemis Accords](https://www.washingtonpost.com/technology/2020/05/15/moon-rules-nasa-artemis/), which included the development of safety zones around lunar mining sites. Former NASA administrator Jim Bridenstine said: “It’s time to establish the regulatory certainty to extract and trade space resources,” and clarified in a separate statement that: “We do believe we can extract and utilize the resources of the moon, just as we can extract and utilize tuna from the ocean.” NASA planned an [Asteroid Redirect Mission](https://www.nasa.gov/content/what-is-nasa-s-asteroid-redirect-mission) which involved collecting a multi-ton boulder from an asteroid and redirecting it into a stable orbit around the moon, but the mission was canceled in 2017. What Companies Are Preparing for a Future of Space Mining? One thing that is becoming clear is that off-earth mining is unlikely to be a state-run activity. Instead, several private companies are jockeying to be first in line to access minerals in space. [iSpace](https://ispace-inc.com/) (Japan) has a mission to “help companies access new business opportunities on the moon,” including the extraction of water and mineral resources to spearhead a space-based economy. Planetary Resources (defunct) was founded in 2009 with the goal of developing a robotic asteroid mining industry. Despite having high-profile founding investors including Alphabet’s Larry Page, Eric Schmidt, and Virgin Group founder Richard Branson, Planetary ran into financial trouble in 2018 and was gone by 2020. Deep Space Industries (defunct) was another early mover that intended to explore, examine, sample, and harvest minerals from asteroids. DSI was acquired by Bradford Space in 2019. [Offworld](https://www.offworld.ai/) is an AI company building “universal industrial robots to do the heavy lifting [including mining] on Earth, the Moon, asteroids, and Mars.” [The Asteroid Mining Corporation](https://asteroidminingcorporation.co.uk/) (UK) is a venture currently crowdfunding for a 2023 satellite mission called “El Dorado,” which will conduct a spectral survey of 5,000 asteroids to identify the most valuable for mining. Alongside the U.S., the tiny European nation of Luxembourg has also developed a space mining framework and has subsequently [emerged as a European hub](https://www.businesswire.com/news/home/20201118005699/en/) for the fledgling industry.

#### **Private capital is necessary for space based mining.**

**Dominev 21** (Dorminev, Bruce. “Does Commercial Asteroid Mining Still Have A Future?.” Forbes. August 31,

2021. Web. December 13, 2021, <https://www.forbes.com/sites/brucedorminey/2021/08/31/does-commercial->

asteroid-mining-still-have-a-future/?sh=17c18fef1a93. )

By some estimates a 100-meter diameter metallic asteroid might contain PGMs worth as much as $12 billion. And if PGMs are ever imported back to Earth, as Kargel told me in a Forbes post nearly a decade ago, “Metals used sparingly because of their high prices would suddenly become much more available for applications that we might not even dream of now.” Thus, Kargel says that commercial mining of PGM asteroids may still have a future but refuses to put a date on when he thinks it will finally happen. It’s going to take an Elon Musk-type figure to either kill the idea or proceed with the idea, he says. Kargel says note only will asteroid mining require additional new advances in both spacecraft technology and launch capability, it will need someone with deep pockets to fund serious space-mining development in a way that enables them to absorb losses of billions of dollars year after year until the technology and mining operations can be scaled up to be profitable.

#### **Reducing dependency on terrestrial rare earth elements is key to combating climate change.**

**Serpell 21** (Oscar Serpell, Associate Director of Academic Programming, Kleinman Center For Energy Policy. “Rare Earth Elements: A Resource Constraint Of The

Energy Transition,”. May 18, 2021. <https://kleinmanenergy.upenn.edu/research/publications/rare-earth-elements-a->

resource-constraint-of-the-energy-transition/.)

Climate change is presenting humans with an unprecedented challenge: the need to wean ourselves off of a group of valuable natural resources; not because of scarcity or cost, but because of their long-term global pollution impacts. Although the combined capabilities of wind, solar, hydropower, and geothermal technologies have the potential to harness near limitless amounts of energy from our environment, they are not free from the limitations of resource availability. On the contrary, the clean energy transition will require economic mobilization on a scale not seen since the industrial revolution, and will strain the global production of silicon, cobalt, lithium, manganese, and a host of other critical elements (Behr2019).

#### **Climate change causes extinction through unsurvivable heat and food scarcity.**

**Sprat and Dunlop 19** (David Spratt and Ian Dunlop, \*Research Director for Breakthrough National Centre for Climate Restoration and co-author of Climate Code Red: The case for emergency action; \*\*member of the Club of Rome AND formerly an international oil, gas and coal industry executive, chairman of the Australian Coal Association, chief executive of the Australian Institute of Company Directors, and chair of the Australian Greenhouse Office Experts Group on Emissions Trading, "Existential climate-related security risk: A scenario approach," Breakthrough National Centre for Climate Restoration, 5-30-2019, <https://docs.wixstatic.com/ugd/148cb0_90dc2a2637f348edae45943a88da04d4.pdf>, Date Accessed: 7-5-2019, SB)

2050: By 2050, there is broad scientific acceptance that system tipping-points for the West Antarctic Ice Sheet and a sea-ice-free Arctic summer were passed well before 1.5°C of warming, for the Greenland Ice Sheet well before 2°C, and for widespread permafrost loss and large-scale Amazon drought and dieback by 2.5°C. The “hothouse Earth” scenario has been realised, and Earth is headed for another degree or more of warming, especially since human greenhouse emissions are still significant. While sea levels have risen 0.5 metres by 2050, the increase may be 2–3 metres by 2100, and it is understood from historical analogues that seas may eventually rise by more than 25 metres. Thirty-five percent of the global land area, and 55 percent of the global population, are subject to more than 20 days a year of lethal heat conditions, beyond the threshold of human survivability. The destabilisation of the Jet Stream has very significantly affected the intensity and geographical distribution of the Asian and West African monsoons and, together with the further slowing of the Gulf Stream, is impinging on life support systems in Europe. North America suffers from devastating weather extremes including wildfires, heatwaves, drought and inundation. The summer monsoons in China have failed, and water flows into the great rivers of Asia are severely reduced by the loss of more than one-third of the Himalayan ice sheet. Glacial loss reaches 70 percent in the Andes, and rainfall in Mexico and central America falls by half. Semi-permanent El Nino conditions prevail. Aridification emerges over more than 30 percent of the world’s land surface. Desertification is severe in southern Africa, the southern Mediterranean, west Asia, the Middle East, inland Australia and across the south-western United States. Impacts: A number of ecosystems collapse, including coral reef systems, the Amazon rainforest and in the Arctic. Some poorer nations and regions, which lack capacity to provide artificially-cooled environments for their populations, become unviable. Deadly heat conditions persist for more than 100 days per year in West Africa, tropical South America, the Middle East and South-East Asia, which together with land degradation and rising sea levels contributes to 21 perhaps a billion people being displaced. Water availability decreases sharply in the most affected regions at lower latitudes (dry tropics and subtropics), affecting about two billion people worldwide. Agriculture becomes nonviable in the dry subtropics. Most regions in the world see a significant drop in food production and increasing numbers of extreme weather events, including heat waves, floods and storms. Food production is inadequate to feed the global population and food prices skyrocket, as a consequence of a one-fifth decline in crop yields, a decline in the nutrition content of food crops, a catastrophic decline in insect populations, desertification, monsoon failure and chronic water shortages, and conditions too hot for human habitation in significant food-growing regions. The lower reaches of the agriculturally-important river deltas such as the Mekong, Ganges and Nile are inundated, and significant sectors of some of the world’s most populous cities — including Chennai, Mumbai, Jakarta, Guangzhou, Tianjin, Hong Kong, Ho Chi Minh City, Shanghai, Lagos, Bangkok and Manila — are abandoned. Some small islands become uninhabitable. Ten percent of Bangladesh is inundated, displacing 15 million people. According to the Global Challenges Foundation’s Global Catastrophic Risks 2018 report, even for 2°C of warming, more than a billion people may need to be relocated due to sea-level rise, and In high-end scenarios “the scale of destruction is beyond our capacity to model, with a high likelihood of human civilisation coming to an end”.

## **cp**

**Counterplan text: the space faring nations should collaborate with the private sector on space mining**

**Jegarajah 2016** (Sri Jegarajah, November 3 2016, “Governments should collaborate on space mining for humanity’s benefit: Expert,” CNBC, <https://www.cnbc.com/2016/11/03/governments-should-collaborate-on-space-mining-for-humanitys-benefit-expert.html>) //neth

-solves all of the aff offense ab unregulated private mining bc it’s now regulated by the government

-avoids the disad bc private space exploration/mining still exists in some form

Space mining is a reality, so the public and private sector need to collaborate, not compete, to advance humanity, a senior scientist told CNBC. Alongside tourism, mining is a major hot-button area of research in the multi-billion dollar space industry. Asteroids are rich with minerals that are rare on Earth. One platinum-rich 500 meter-wide asteroid could contain about 174 times the world’s yearly output of the metal, and 1.5 times the known global reserves of platinum-group metals, according to U.S. firm Planetary Resources, one of the major asteroid mining players. The hope is that asteroids near Earth can become developed into mining centers that can send refined materials, rare metals and even clean energy to Earth, Jose Cordeiro, a founding faculty and energy advisor at the Singularity University, told CNBC. So much energy lies beyond Earth that it can help resolve Earthly issues, such as climate change, water and food security, he added. But with any new frontier lies the thorny issue of regulation. “We shouldn’t think about countries when talking about the universe, we should be talking about planets. Thinking just about the U.S.A, Russia or China is not the way to go, we have to think about humanity and its continuation outside Earth,” Cordeiro explained. Interplanetary travel is important for the future of humanity, just as artificial intelligence is for the human condition, he insisted. “Going to the Moon was fundamental for humanity and a trip to Mars will do the same....We simply need more collaboration.”

## **T**

**Interpretation: the affirmative must defend that ALL appropriations of outer space by private entities are unjust. To clarify, they can’t choose a single form of appropriation**

**Violation - they only defend mining**

**Here’s a list of private space appropriations your aff DOESN’T include**

**Weinzierl and Sarang 2-12**-2021 (Matt Weinzierl and Mehak Sarang, February 12 2021, “The Commercial Space Age Is Here,” Harvard Business Review, <https://hbr.org/2021/02/the-commercial-space-age-is-here>) //neth

In 2019, 95% of the estimated $366 billion in revenue earned in the space sector was from the space-for-earth economy: that is, goods or services produced in space for use on earth. The space-for-earth economy includes telecommunications and internet infrastructure, earth observation capabilities, national security satellites, and more. This economy is booming, and though research shows that it faces the challenges of overcrowding and monopolization that tend to arise whenever companies compete for a scarce natural resource, projections for its future are optimistic. Decreasing costs for launch and space hardware in general have enticed new entrants into this market, and companies in a variety of industries have already begun leveraging satellite technology and access to space to drive innovation and efficiency in their earthbound products and services. In contrast, the space-for-space economy — that is, goods and services produced in space for use in space, such as mining the Moon or asteroids for material with which to construct in-space habitats or supply refueling depots — has struggled to get off the ground. As far back as the 1970s, research commissioned by NASA predicted the rise of a space-based economy that would supply the demands of hundreds, thousands, even millions of humans living in space, dwarfing the space-for-earth economy (and, eventually, the entire terrestrial economy as well). The realization of such a vision would change how all of us do business, live our lives, and govern our societies — but to date, we’ve never even had more than 13 people in space at one time, leaving that dream as little more than science fiction. Today, however, there is reason to think that we may finally be reaching the first stages of a true space-for-space economy. SpaceX’s recent achievements (in cooperation with NASA), as well as upcoming efforts by Boeing, Blue Origin, and Virgin Galactic to put people in space sustainably and at scale, mark the opening of a new chapter of spaceflight led by private firms. These firms have both the intention and capability to bring private citizens to space as passengers, tourists, and — eventually — settlers, opening the door for businesses to start meeting the demand those people create over the next several decades with an array of space-for-space goods and services.

**Standards**

**1 – limits – there are infinite definitions of what private appropriations of outer space could mean – our card lists a few. Specifying justifies infinite affs and kills the neg’s ability to engage – we can’t be expected to prep for each of these affs – kills fairness bc big schools will always have access to more prep and kills education bc we wont be able to have substantive discussions on the aff. this is supercharged the weekend of the first toc bid tournaments bc small schools cant rely on wiki prep.**

**2 – clash – wholeres debate is key to clash – anything else leads to two ships passing in the night bc the neg doesn’t have substantive, well-researched objections to the aff. kills education bc we never learn anything about both sides of the topic – aff is more likely to win bc they’re ahead on the research about their specific plan.**

**Voters –**

**1 -- Fairness – you need fairness to evaluate debate rounds – the judge needs to vote for the better debater not the better cheater. Unfair advantages in debate rounds make decisions illegitimate and hurt our ability to access real world skills.**

**2 – education – it’s a voter because it’s the reason schools fund debate and the only portable skills we gain from debate are a result of education – knowing how to discuss the merits of broad policy options has more real world implications than knowing how to go for an rvi or knowing how to defend policies that are so obscure they’d never be passed.**

**Paradigm issues –**

**1 – No RVIs**

**a] logic – you don’t get to win just for proving you’re topical**

**b] chilling effect – rvis disincentivize debaters from checking abuse**

**c] theory baiting – rvis incentivize affs to be as unnegatable as possible so they can bait t or theory and win**

**2 – competing interpretations over reasonability**

**a] arbitrariness – reasonability is arbitrary and invites judge intervention**

**b] brightlines mean competing interps – it becomes a debate of whose brightline is best which is the same thing as competing interps – you’re debating about whose model is best**

**3 – drop the debater**

**a] logic – drop the argument doesn’t make sense – the shell indics their entire advocacy**

**b] norm setting – negate on t to set a norm for being fair and topical – affirming incentivizes sketchy non-t affs and better t prepouts and less substantive debate – leads to worse and less educational debates**

## **Solar power satellites da**

#### **[Horowitz] There is an energy crisis and its only going to get worse in the next couple months**

**Horowitz 21** (Julia Horowitz, a senior writer. She leads CNN Business international coverage of global markets and business , October 7th, 2021, A global energy crisis is coming. There's no quick fix, CNN Business, <https://www.cnn.com/2021/10/07/business/global-energy-crisis/index.html>) SJ

A global energy crunch caused by weather and a resurgence in demand is getting worse, stirring alarm ahead of the winter, when more energy is needed to light and heat homes. Governments around the world are trying to limit the impact on consumers, but acknowledge they may not be able to prevent bills spiking. Further complicating the picture is mounting pressure on governments to accelerate the transition to cleaner energy as world leaders prepare for a critical climate summit in November. In China, [rolling blackouts](https://edition.cnn.com/2021/09/28/economy/china-power-shortage-gdp-supply-chain-intl-hnk/index.html) for residents have already begun, while in India power stations are scrambling for coal. [Consumer advocates in Europe](https://twitter.com/beuc/status/1445702126336761865?s=20) are calling for a ban on disconnections if customers can't promptly settle what they owe. "This price shock is an unexpected crisis at a critical juncture," EU energy chief Kadri Simson said Wednesday, confirming the bloc will outline its longer-term policy response next week. "The immediate priority should be to mitigate social impacts and protect vulnerable households." In Europe, natural gas is now trading at the equivalent of $230 per barrel, in oil terms — up more than 130% since the beginning of September and more than eight times higher than the same point last year, according to data from Independent Commodity Intelligence Services. In East Asia, the cost of natural gas is up 85% since the start of September, hitting roughly $204 per barrel in oil terms. Prices remain much lower in the United States, a net exporter of natural gas, but still have shot up to their highest levels in 13 years. "A lot of it is feeding off of fear about what the winter's going to look like," said Nikos Tsafos, an energy and geopolitics expert at the Center for Strategic and International Studies, a Washington-based think tank. He thinks that anxiety has caused the market to break away from the fundamentals of supply and demand. The frenzy to secure natural gas is also pushing up the price of coal and oil, which can be used as substitutes in some cases, but are even worse for the climate. India, which remains extremely dependent on coal, said this week that as many as 63 of its 135 coal-fired power plants have [two days or less](https://edition.cnn.com/2021/10/06/energy/india-energy-crisis-coal-hnk-intl/index.html) of supplies. The circumstances are causing central banks and investors to worry. Rising energy prices are contributing to inflation, which already was a major concern as the global economy tries to shake off the lingering effects of Covid-19. Dynamics over the winter could make matters worse.

#### **[Stossel] Government space programs are ineffective at innovating**

**Stossel 20** (John Stossel, July 29, 2020, The Private Space Race, <https://www.capitalismmagazine.com/2020/07/the-private-space-race/>) SJ

An Obama administration committee had concluded that launching such a vehicle would take 12 years and cost $36 billion. But this rocket was finished in half that time — for less than $1 billion (1/36th the predicted cost). That’s because it was built by Elon Musk’s private company, Space X. He does things faster and cheaper because he spends his own money. “This is the potential of free enterprise!” explains aerospace engineer Robert Zubrin in my newest video. Of course, years ago, NASA did manage to send astronauts to the moon. That succeeded, says Zubrin, “because it was purpose-driven. (America) wanted to astonish the world what free people could do.” But in the 50 years since then, as transportation improved and computers got smaller and cheaper, NASA made little progress. Fortunately, President Obama gave private companies permission to compete in space, saying, “We can’t keep doing the same old things as before.” Competition then cut the cost of space travel to a fraction of what it was. Why couldn’t NASA have done that? Because after the moon landing, it became a typical government agency — overbudget and behind schedule. Zubrin says NASA’s purpose seemed to be to “supply money to various suppliers.” Suppliers were happy to go along. Zubrin once worked at Lockheed Martin, where he once discovered a way for a rocket to carry twice as much weight. “We went to management, the engineers, and said, ‘Look, we could double the payload capability for 10% extra cost.’ They said, ‘Look, if the Air Force wants us to improve the Titan, they’ll pay us to do it!'” NASA was paying contractor’s development costs and then adding 10% profit. The more things cost, the bigger the contractor’s profit. So contractors had little incentive to innovate. Even NASA now admits this is a problem. During its 2020 budget request, Administrator Jim Bridenstine confessed, “We have not been good at maintaining schedule and … at maintaining costs.” Nor is NASA good at innovating. Their technology was so out of date, says Zubrin, that “astronauts brought their laptops with them into space — because shuttle computers were obsolete.” I asked, “When (NASA) saw that the astronauts brought their own computers, why didn’t they upgrade?” “Because they had an entire philosophy that various components had to be space rated,” he explains. “Space rating was very bureaucratic and costly.” NASA was OK with high costs as long as spaceships were assembled in many congressmen’s districts. “NASA is a very large job program,” says Aerospace lawyer James Dunstan. “By spreading its centers across the country, NASA gets more support from more different congressmen.” Congressmen even laugh about it. Randy Weber, R-Texas, joked, “We’ll welcome (NASA) back to Texas to spend lots of money any time.” Private companies do more with less money. One of Musk’s cost-saving innovations is reusable rocket boosters. For years, NASA dropped its boosters into the ocean. “Why would they throw it away?” I ask Dunstan. “Because that’s the way it’s always been done!” he replies. Twenty years ago, at Lockheed Martin, Zubrin had proposed reusable boosters. His bosses told him: “Cute idea. But if we sell one of these, we’re out of business.” Zubrin explains, “They wanted to keep the cost of space launch high.” Thankfully, now that self-interested entrepreneurs compete, space travel will get cheaper. Musk can’t waste a dollar. Space X must compete with Jeff Bezos’ Blue Origin, Richard Branson’s Virgin Galactic, Boeing, Lockheed Martin and others.The private sector always comes up with ways to do things that politicians cannot imagine. Government didn’t invent affordable cars, airplanes, iPhones, etc. It took competing entrepreneurs, pursuing profit, to nurture them into the good things we have now. Get rid of government monopolies.

#### **[Snowden] Solar power satellites solves the energy crisis**

**Snowden 19** (Scott Snowden, Mar 12, 2019, has written about science and technology for 20 years for publications around the world, Solar Power Stations In Space Could Supply The World With Limitless Energy, Forbes, <https://www.forbes.com/sites/scottsnowden/2019/03/12/solar-power-stations-in-space-could-supply-the-world-with-limitless-energy/?sh=23471fec4386> ) SJ

While on the surface of the Earth, society still struggles to adopt solar energy solutions, many scientists maintain that giant, space-based solar farms could provide an environmentally-friendly answer to the world's energy crisis. Only last week, we reported that China [was planning to](https://www.forbes.com/sites/scottsnowden/2019/03/05/china-plans-to-build-the-worlds-first-solar-power-station-in-space/#51f7f9c35c94) build the world's first solar power station to be positioned in Earth's orbit. Because the sun always shines in space, an orbital solar power station is seen as an inexhaustible source of clean energy. "Above the Earth, there's no day and night cycle and no clouds or weather or anything else that might obstruct the sun's ray, so a constant power source is available," said Ali Hajimiri, professor of electrical engineering at the California Institute of Technology and co-director of the university’s [Space Solar Power Project](https://www.spacesolar.caltech.edu/). Collecting solar power in space and wirelessly transmitting was first described by Isaac Asimov in 1941 in his short story Reason. In 1968, American aerospace engineer Peter Glaser published the first technical article on the concept – Power From The Sun: Its Future in the journal [Science](http://www.sciencemag.org/). Space-based solar power attracted considerable attention in the 1970s as the necessary individual technical components – in essence, photovoltaic cells, satellite technology and wireless power transmission – were developed. Despite the concept being technically feasible, it was considered economically unrealistic at the time and research ultimately stalled. “The idea seems to be going through a resurgence and it’s probably because the technology exists to make it happen,” said John Mankins, a former NASA scientist who was at the forefront of this field in the 1990s, before it was abandoned. Global energy demands are only going to grow, says Hajimiri. The global population is expected to reach a staggering 9.6 billion by 2050, according to a [United Nations report](http://www.un.org/en/development/desa/news/population/un-report-world-population-projected-to-reach-9-6-billion-by-2050.html), so methods of generating large quantities of clean energy must be found. A space-based solar power system could provide energy to everyone, even in places that don't receive sunlight all year round, like northern Europe and Russia. In April of 2015, a research agreement between Northrop Grumman and Caltech provided up to $17.5m for the development of innovations necessary to enable a space solar power system. Three Caltech professors head up the project: joining Hajimiri were Harry Atwater and Sergio Pellegrino. Caltech is just one institution working on developing this technology. We know that scientists at the Chongqing Collaborative Innovation Research Institute for Civil-Military Integration in China are constructing a facility to test the theoretical viability of the concept and plans to develop an orbital photovoltaic array [were announced](https://phys.org/news/2009-11-japan-eyes-solar-station-space.html) in Japan some time ago. One of the biggest issues to overcome is that of getting an array of solar panels large enough to make the project viable into orbit. Early concept designs in the 1970s featured giant arrays that would've proved very difficult to actually get into orbit. "The systems of the 70s for solar power satellites, the cost estimates suggested, at that time, that it might be as much as a trillion dollars to get to the first kilowatt hour because of the way the designs worked. Essentially a single satellite, a platform, an integrated, monolithic platform about the size of Manhattan," said Mankins.However, with SpaceX and Blue Origin slowly driving the cost of orbital delivery down, suddenly the concept seems a little closer to reality. "Going to modular systems to allow mass production, I believe was the answer to how to get solar power satellite costs down to something more reasonable," said Mankins.

#### **[Klare] Energy crisis results in war**

**Klare 14** (Micheal T Klare, July 15, 2014, Twenty-first century energy wars: how oil and gas are fuelling global conflicts, a Five Colleges professor of Peace and World Security Studies, <https://energypost.eu/twenty-first-century-energy-wars-oil-gas-fuelling-global-conflicts/>) SJ

As these conflicts and others like them suggest, fighting for control over key energy assets or the distribution of oil revenues is a [critical factor](http://www.tomdispatch.com/blog/175540/) in most contemporary warfare. While ethnic and religious divisions may provide the political and ideological fuel for these battles, it is the potential for mammoth oil profits that keeps the struggles alive. Without the promise of such resources, many of these conflicts would eventually die out for lack of funds to buy arms and pay troops. So long as the oil keeps flowing, however, the belligerents have both the means and incentive to keep fighting. In a fossil-fuel world, control over oil and gas reserves is an essential component of national power. “Oil fuels more than automobiles and airplanes,” Robert Ebel of the Center for Strategic and International Studies [told](http://2001-2009.state.gov/s/p/of/proc/tr/10187.htm) a State Department audience in 2002. “Oil fuels military power, national treasuries, and international politics.” Far more than an ordinary trade commodity, “it is a determinant of well being, of national security, and international power for those who possess this vital resource, and the converse for those who do not.” If anything, that’s even truer today, and as energy wars expand, the truth of this will only become more evident. Someday, perhaps, the development of renewable sources of energy may invalidate this dictum. But in our present world, if you see a conflict developing, look for the energy. It’ll be there somewhere on this fossil-fueled planet of ours.

## **Case**

Adv 1

1—their scoles evidence is only about a very small type of asteroid mining in which asteroids are broken up and orbit the moon, this cant be generalized to all asteroid mining

2—mcknight 17- nothing in this card mentions asteroid mining literally control f so no link

3—if asteroid mining alr exist rn and no impact proves its non unqiue

4—biggs 18 if these satelites aren’t key, all the data these satelites can get can be done on earth, for example we can measure the temperature of the oceans on earth and monitor wildfired o nearth too

5—our counterplan solves the xu 20 card

#### **6-Private companies will actually be held more accountable than governments when accidents in space occur.**

**AL-Rodhan 15**(Al-Rodhan, Nayef. “The Privatization Of Space: When Things Go Wrong.” CSS (ETH Zurich). August 14, 2015. Web. December 11, 2021. <http://isnblog.ethz.ch/technology/power-vertical-or-power-horizontal-russias-challenge-to-the-international-order>.) SJ

The most cited benefit of the shift to private space exploration is cost. These companies must bid for NASA contracts, which lowers the taxpayer cost of these missions, as some research and development R&D costs are absorbed by the company. Governments and private companies also function differently in terms of the different interest groups to whom they are responsible. NASA is beholden to the government and the taxpayer, while private companies must deal with a more complex web of investors/shareholders, the bottom line, and the need to keep a secure contract. Yet with these benefits, there are new challenges that must be addressed; perhaps the greatest of which is “what happens when something goes wrong”? Rocket missions and space travel are inherently difficult and risky; it’s only a matter of time before this becomes a bigger issue. Government space programs are no strangers to failed launches, or to human casualties. In fact, the only space program which has no known casualties to date is China’s. Private companies have yet to amass significant casualties, with the only death occurring during a failed Virgin Galactic test flight in 2014. But because that flight was not part of a mission to the ISS and was not tied to any government contract, the implications were different. If an astronaut from NASA were killed in a launch orchestrated by a private company, there may be far-reaching effects both for NASA and for the company in question. As aforementioned, governments are most likely not held accountable to the same degree as private companies are, as a government can control to some degree how transparent it wants to be. Furthermore, because there were no alternatives to government space programs, accidents were seen to some degree as par for the course. For instance, while the Challenger and Columbia disasters affected NASA’s operations (including an over two year hiatus form launching shuttles), it did not halt the space program. By comparison, private companies actually have a far more difficult set of issues to face in the case of a mishap. In a worst case scenario, a private company could make an easy scapegoat if ever a government’s legitimacy were to be threatened due to a mishap.

#### **7-- [Reisner et al] There’s no nuclear winter. Prefer our study – it has 9 PhD’s with experts in every relevant scientific field.**

**Reisner et al 2018[** [Jon Reisner](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Reisner%2C+Jon) - Climate and Atmospheric Sciences PhD at Los Alamos National Laboratory; [Gennaro D'Angelo](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=D%27Angelo%2C+Gennaro) – PhD [Los Alamos National Laboratory](https://www.researchgate.net/institution/Los_Alamos_National_Laboratory), [Theoretical Division](https://www.researchgate.net/institution/Los_Alamos_National_Laboratory/department/Theoretical_Division2) [Eunmo Koo](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Koo%2C+Eunmo) - Ph.D., Mechanical Engineering, University of California at Berkeley, Expertise: Atmospheric fluid dynamics, Modeling fluid-solid interactions, Fire spread in urban and wildland environment, Wind energy harvest, High-performance computing simulations; [Wesley Even](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Even%2C+Wesley) - Ph.D. Physics - Louisiana State University, Expertise: Computational Physics, Astrophysics [Matthew Hecht](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Hecht%2C+Matthew) – Expert in Climate and Ocean Modeling [Elizabeth Hunke](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Hunke%2C+Elizabeth) - Ph.D., Program in Applied Mathematics, University of Arizona, Expertise: Sea Ice Models; [Darin Comeau](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Comeau%2C+Darin) – PhD, Applied Mathematics, University of Arizona , Expert in High dimensional data analysis, statistical and predictive modeling, and uncertainty quantification, with particular applications to climate science, as well as process-based modeling of the cryosphere; [Randall Bos](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Bos%2C+Randall) – PhD, Expert in Nuclear Weapon Effects Modeling and Simulation [James Cooley](https://agupubs.onlinelibrary.wiley.com/action/doSearch?ContribAuthorStored=Cooley%2C+James) - Ph.D. -- Physics, University of Maryland, Expert in Weapon Physics, Emergency Response, Computational Physics, Verification, and Validation (2018). Climate impact of a regional nuclear weapons exchange: An improved assessment based on detailed source calculations. Journal of Geophysical Research: Atmospheres , 123 , 2752 – 2772. <https://doi.org/10.1002/2017JD027331> Received 20 JUN 2017 Accepted 1 FEB 2018 Accepted article online 13 FEB 2018 Published online 14 MAR 2018 ©2018. The Authors. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distri- bution in any medium, provided the original work is properly cited, the use is non-commercial and no modi fi cations or adaptations are made.] LHSBC

Abstract We present a multiscale study examining the impact of a regional exchange of nuclear weapons on global climate. Our models investigate **multiple phases of the effects of nuclear weapons** usage, including growth and rise of the nuclear fireball, ignition and spread of the induced fi restorm, and **comprehensive Earth system modeling** of the oceans, land, ice, and atmosphere. This study follows from the scenario originally envisioned by Robock, Oman, Stenchikov, et al. (2007, <https://doi.org/10.5194/acp-7-2003-2007>), based on the analysis of Toon et al. (2007, <https://doi.org/10.5194/acp-7-1973-2007>), which assumes a regional exchange between India and Pakistan of fi fty 15 kt weapons detonated by each side. We expand this scenario by modeling the processes that lead to production of black carbon, in order to re fi ne the black carbon forcing estimates of these previous studies. When the Earth system model is initiated with 5 × 10 9 kg of black carbon in the upper troposphere (approximately from 9 to 13 km), the impact on climate variables such as global temperature and precipitation in our simulations is similar to that predicted by previously published work. However, while our thorough simulations of the fi restorm produce about 3.7 × 10 9 kg of black carbon, we fi nd that the vast majority of the black carbon **never reaches an altitude above weather systems** (approximately 12 km). Therefore, our Earth system model simulations conducted with model-informed atmospheric distributions of black carbon produce signi fi cantly lower global climatic impacts than assessed in prior studies, as the carbon at lower altitudes is more **quickly removed from the atmosphere**. In addition, our model ensembles indicate that statistically signi fi cant effects on global surface temperatures are limited to the fi rst 5 years and are much smaller in magnitude than those shown in earlier works. None of the simulations produced a nuclear winter effect. We fi nd that the effects on global surface temperatures are not uniform and are concentrated primarily around the highest arctic latitudes, dramatically **reducing the global impact on human health and agriculture** compared with that reported by earlier studies. Our analysis demonstrates that the probability of significant global cooling from a limited exchange scenario as envisioned in previous studies is **highly unlikely**, a **conclusion supported by examination of natural analogs,** such as large forest fires and volcanic eruptions.

#### **8--- turn: Nuke war won’t cause extinction, but it’ll spur political will for meaningful disarmament.**

**Deudney 18** [Associate Professor of Political Science at Johns Hopkins University. 03/15/2018. “The Great Debate.” The Oxford Handbook of International Security. www.oxfordhandbooks.com, doi:10.1093/oxfordhb/9780198777854.013.22] // Re-Cut Justin

Although nuclear war is the oldest of these technogenic threats to civilization and human survival, and although important steps to restraint, particularly at the end of the Cold War, have been achieved, the nuclear world is increasingly changing in major ways, and in almost **entirely dangerous directions**. The third “bombs away” phase of the great debate on the nuclear-political question is more consequentially divided than in the first two phases. Even more ominously, most of the momentum lies with the forces that are pulling states **toward nuclear-use**, and with the radical actors bent on inflicting catastrophic damage on the leading states in the international system, particularly the United States. In contrast, the arms control project, although intellectually vibrant, is **largely in retreat** on the world political stage. The arms control settlement of the Cold War is **unraveling**, and the world public is more divided and distracted than ever. With the recent election of President Donald **Trump**, the United States, which has played such a dominant role in nuclear politics since its scientists invented these fiendish engines, now has an **impulsive and uninformed leader**, boding **ill for nuclear restraint and effective crisis management**. Given current trends, it is prudent to assume that **sooner or later**, and probably sooner, **nuclear weapons will again be the used in war**. But this bad news may contain a **“silver lining” of good news**. Unlike a **general** nuclear war that might have occurred during the Cold War, such a nuclear event now would probably **not mark the end of civilization (or** of **humanity**), due to the great **reductions in nuclear forces** achieved at the end of the Cold War. Furthermore, **politics** on “the day after” could have **immense potential for positive change**. The survivors would not be likely to envy the dead, but would surely have a **greatly renewed resolution for “never again.”** Such an event, completely unpredictable in its particulars, would **unambiguously put the nuclear-political question back at the top of the world political agenda**. It would unmistakeably remind leading states of their **vulnerability** It might also trigger more robust efforts to achieve the **global regulation of nuclear capability**. Like the bombings of Hiroshima and Nagasaki that did so much to catalyze the elevated concern for nuclear security in the early Cold War, and like the experience “at the brink” in the Cuban Missile Crisis of 1962, **the now bubbling nuclear caldron holds the possibility of inaugurating a major period of institutional innovation and adjustment toward a fully “bombs away” future**.

Adv 2

#### **1---Space Multilateralism is slow and ineffective – decades of inaction and gridlock prove**

Paul **Meyer 17.**  (Paul Meyer is adjunct professor of International Studies and fellow in International Security at Simon Fraser University and senior fellow at The Simons Foundation “Dark Forces Awaken: The Prospects for Cooperative Space Security.” Simons Papers in Security and Development No. 58/2017, <https://www.tandfonline.com/doi/full/10.1080/10736700.2016.1268750/////>)

This paper takes as its starting point one of the most positive developments in recent years in the realm of outer space security diplomacy and contrasts this with a set of subsequent negative trends that threaten to eclipse it. The positive development was the consensus report of the UN Group of Governmental Experts (GGE) on “Transparency and Confidence-building Measures in Outer Space Activities” of July 2013.1 This major report emerged despite a protracted impasse in consideration of outer space security issues in the responsible diplomatic forums. The “Prevention of an Arms Race in Outer Space” (**PAROS**) **has been a standing item on the agenda of the Conference on Disarmament since 1982**. The Conference, a 65 member state body in Geneva, is supposed to serve as the UN’s chief forum for the negotiation of multilateral agreements on arms control and disarmament. While the “Prevention of an Arms Race in Outer Space” item has remained on the Conference’s formal agenda an Ad Hoc Committee mandated to consider this subject only operated between 1985 and 1994. Since then and **due to the overall deadlock regarding competing priorities that has** ~~paralyzed~~ [**hindered**] **the Conference and prevented it from officially working on this or any other item on its agenda, the outer space security issue has been sidelined at the UN**. Although outer space has been the subject of annual declaratory resolutions in the First (Disarmament and International Security) Committee of the UN General Assembly and half a day of thematic debate during these sessions, **the fact remains that no significant action has been undertaken multilaterally specifically on** the **space** security theme **for decades**. There have been some positive developments in the context of the UN’s Committee on the Peaceful Use of Outer Space (COPUOUS) most notably in 2007 with adoption of Debris Mitigation Guidelines as well as more recently agreement on several policy guidelines developed by the working group on the Long Term Sustainability of Outer Space, but these lack an explicit space security orientation.

#### **2--Alliances check miscalc w/ China – too costly**

MacDonald 13 [(Bruce, teaches at the United States Institute of Peace on strategic posture and space/cyber security issues, leads a study on China and Crisis Stability in Space, and is adjunct professor at the Johns Hopkins School of Advanced International Studies) “Deterrence and Crisis Stability in Space and Cyberspace,” in Anti-satellite Weapons, Deterrence and Sino-American Space Relations, September 2013, <https://apps.dtic.mil/dtic/tr/fulltext/u2/a587431.pdf>] TDI

**The US alliance structure can promote deterrence and crisis stability in space, as with nuclear deterrence. China has no such alliance system**. If China were to engage in large-scale offensive counter-space operations, it would face not only the United States, but also NATO, Japan, South Korea and other highly aggrieved parties. **Given Beijing’s major export dependence on these markets**, and its dependence upon them for key raw material **and** high technology **imports, China would be as devastated economically if it initiated strategic attacks in space**. In contrast to America’s nuclear umbrella and extended deterrence, US allies make a tangible and concrete contribution to extended space deterrence through their multilateral participation in and dependence upon space assets. **Attacks on these space assets would directly damage allied interests as well as those of the United States**, further **strengthening deterrent effects.**

#### **3---No war with Russia.**

**Trenin 19** Dr. Dmitri Vitalyevich Trenin, PhD is the director of the Carnegie Moscow Center, a think tank and regional affiliate of the Carnegie Endowment for International Peace, former senior research fellow at NATO Defense College. [Fears of World War III are overblown, 5-3-2019, [https://www.politico.eu/article/donald-trump-vladimir-putin-nato-crimea-fears-of-world-war-iii-are-overblown/]//BPS](https://www.politico.eu/article/donald-trump-vladimir-putin-nato-crimea-fears-of-world-war-iii-are-overblown/%5d/BPS)

NATO is still very much **exerting pressure** on Russia. It's considered more of an annoyance than an immediate threat in Moscow, but also keeps the country in permanent "war mode" vis-à-vis the U.S. Because Moscow is focused on Washington, this means Europeans usually get a pass. As for Russia’s own intentions, two things are clear. There is no interest in Moscow in attacking the Baltic states or Poland. These countries are as **safe** now as they were before 2014. Suggestions otherwise simply point to the deep wounds in both nations' psyche, which will not be healed for many decades. Should Ukraine's leaders decide to repeat Mikheil Saakashvili’s mistake in 2008 and launch a major offensive to retake Donbas — however unlikely — the Russian response could indeed be devastating and lead to Ukraine's loss of sovereignty, as Putin recently stated. But does this mean Russia will move on Ukraine unprovoked? Most certainly not. Putin's main concerns are largely **domestic**. He has an ambitious program that **logically calls** for more **economic ties with the West**. To move forward, he is looking to **ease tensions** with the EU and the U.S. What Putin wanted to get out of Helsinki was mainly to start **a dialogue** with Washington. Those hopes are now visibly going up in smoke. It is safe to bet that Russia will continue to face the same opposition from a coalition of U.S. and EU interests. The first détente in the hybrid war between Russia and the West was indeed nipped in the bud by Trump's behavior and the vehemence of his domestic critics. So be it. Moscow will not capitulate, and will indeed push back. But it's not likely to take the form of an aggressive, overt military attack. Fears of new wars are far from accurate. Moscow's strategy should now be one **of patience**, leaving America and Europe to their own devices and focusing on relations with countries far more relevant to its future: Asia and the Middle East.

#### Private ownership rights are key to effective space development that sustains multinational coalitions---the Artemis Accords are a step in the right direction.

**Brooks 20** (Brooks, Andrew. “The Artemis Accords: The Necessary Incentive Of Space Extraction Rights.” Columbia Journal of Transnational Law. November 09, 2020. Web. December 11, 2021. <https://www.jtl.columbia.edu/bulletin-blog/the-artemis-accords-the-necessary-incentive-of-space-extraction-rights>.) SJ

The history of innovation is replete with government incentives for private development. Some incentives took the form of cash prizes, similar to the above-mentioned programs operated by the U.S. government. For example, the British famously offered a cash prize to the first person who would develop a method for determining the longitude of ships at sea, and Napoleon offered a prize for food preservation which led to the invention of canning. The other type of incentive, which the Artemis Accords recognize and create in the space field for the first time, is ownership rights. As Alan Wasser—one of the foremost theorists of space property rights— phrases it: the “right to claim newly settled property has always provided the economic incentive for human expansion.” This held true historically during the Age of Discovery, when joint-stock chartered companies raised massive amounts of capital, funding European exploration and settlement. It also holds true in the modern age, with the patent and copyright systems protecting the owner’s ability to profit from their investment. There is no reason then to assume that ownership rights will provide any lesser incentive for future space development. Despite what critics claim, ownership rights are not a proxy for “national dominance.” Such rights do not displace “multilateral international cooperation.” To the contrary, the emergence of private ownership in space will invariably benefit the sort of multinational coalitions best able to fund the enormous amounts of investment needed to reap any benefit. It is true that there will invariably be competition between private enterprises and partnerships; this is unavoidable given the economic stakes. But this competition is unlikely to be violent. The nation-state signatories of the Accords not only agreed to remain compliant with past agreements and their prohibitions on the militarization of space, but further agreed to “make the scientific results obtained from cooperative activities under these Accords available to the public and the international scientific community.” The Artemis Accords recognize the economic benefits that will flow from space exploration and development. However, unlike the ill-fated 1979 Moon Treaty, they also harness human nature and the incentives that history has shown lead to results. Through recognizing the existence of property rights in space, the Accords provide the framework to protect investment in the space field and give investors the hope that perhaps they themselves will be the world’s first trillionaires.