# 1AC---Antitrust – CoopTech v2

#### I Affirm

## 1AC---Antitrust

#### The advantage is Antitrust –

#### iLaw has failed to keep up with commercial space---only the aff allows for robust application of iLaw and Antitrust---encourages tech innovation and investment. US is modelled internationally.

Goswami 20, [Pranoy Goswami, 11-02-2020, (Pranoy is a fourth-year student at National Law University and Judicial Academy, Assam. He is currently engaged as a Research Assistant with the Center for the Study of Law and Culture, Columbia Law School. He has an avid interest in the areas of Intellectual Property, International Humanitarian Laws, Gender Justice Laws and Dispute Resolution.), "The offshoots of privatization of the space race: Need for an International Antitrust Regime," <https://thelawblog.in/2020/11/02/the-offshoots-of-privatization-of-the-space-race-need-for-an-international-antitrust-regime//> Accessed: 2-11-2022] Sachin \*\*Brackets in original\*\*

In June 2019, Jeff Bezos, the founder of Amazon, talked about the expansive realms of humanity in outer space. Having recently developed Blue Origin, a privately held rocket-launch firm, he talked of the endless business opportunities that outer space has to offer in the next decade. The basic requirement, in his view, however, was a well-designed legal environment to prevent any tussle between business interests and humanity’s thrust for resources in space.

The need for international space law to evolve, in consonance with the dynamic space race, has become the need of the hour. To that effect, the importance of antitrust laws, and the requisite antitrust laws (with special reference to the United States of America, Russia and India) which could prove to be a boon for outer space conservation vis-a-vis the promotion and upliftment of the global entrepreneurial and State interests have been discussed here.

Historical Background of the Space Race

A cursive glance through the pages of the post World War II period would reveal the push for ascendancy by Russia and the United States of America, towards their goal of being a superpower. In 1957, Russia (the erstwhile USSR) launched Sputnik into space. In early 1958, the USA followed closely with a launch of its first satellite, along with setting up the National Aeronautics and Space Administration (NASA). In April, 1961, Russia launched the first human into space, and the USA followed suit exactly a month after that. However, the USA takes the bragging rights for arguably the most publicised moment of mankind in its exploration of space- on July 20, 1969, Neil Armstrong, along with his team, landed on the Moon. The ‘50s and the ‘60s have given us such watershed moments galore.

The International Law Perspective

The quintessential law in place to govern space exploration is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space (generally referred to as the “Outer Space Treaty” or “OST”). The Outer Space Treaty seeks to orchestrate the role of international law in the balance of resource management in space.

Another important piece of legislation in this regard is the Agreement Governing the Activity of States on the Moon and Other Celestial Bodies (the “Moon Treaty”). Even though signature for the Moon Treaty had been opened in 1979, there are only eleven signatories to this date. No country which is presently harnessing the benefits of manned space explorations and partaking in a competitive space race has ratified the agreement. One of the key objectives behind the introduction of the Moon Treaty was to fine tune a glaring chink in the Outer Space Treaty, by incorporating the idea of “banning any ownership of any extraterrestrial property by any organization or [private] person, unless that organization is international and governmental.” Like a host of other international law instruments, the Moon Treaty is not mandatory for countries to adhere to. If it’s motives were ideally realized, the aspect of privatization in the field of space race could have had chilling effects. As of now, it finds itself perpetuating in uncertainty.

Antitrust Laws in the United States, Russia and India

The raison d etre behind the popularity of antitrust laws stems from the fact that it preserves the integrity and institutionalisation of private competition. If antitrust laws were to perform in full flow, start-ups would be encouraged and such a free flowing market would in turn hand the advantage of economies of scale to the known market players as well. Governments need to bolster an antitrust law framework to cut down on predatory practices, black marketing and restrictive trade practices in a globalised, open-ended economy.

Some of the most impressive antitrust laws emanate from the United States, ranging from the Sherman Act, the Federal Trade Commission Act, and the Clayton Act. Antitrust law in the United States has previously been applied in the field of private space explorations as well, with the Federal Trade Commission’s review and approval of the October, 2006 United Launch Alliance deal between Boeing and Lockheed Martin being a major highlight of the regime. In the case of SpaceX v. Boeing, the Supreme Court held that “a firm must take overt action to exercise competition, before it is considered to be a violation of the law” and dismissed SpaceX’s appeal of undue influence on the part of Boeing to prevent their entry into the market.

Russia, on the other hand, uses the Federal Antimonopoly Service to deal with antitrust issues in their country. The 135-FZ Federal Law “On Protection of Competition”, uses the extraterritoriality principle in applying competition laws to transactions and agreements extending beyond, and affecting the territory of Russia. The latest upgrade to the Federal Law saw a reduction of administrative barriers to certain types of transactions. It ought to be read in consonance with Decree No. 5663-1 of the Russian House of Soviets, which deals with “space activity”, to determine antitrust matters in the area of space explorations and private missions from Russia.

India enacted the Competition Act in 2002 to provide for the establishment of the Competition Commission of India (CCI) to curb anti-competitive practices, and to bridge the individual consumers’ interests with that of trade interests and corporate sustainability. The antitrust regime in India, arguably, is still in its nascent stage. In matters of space exploration, the Indian Space Research Organization (ISRO) has been performing commendably, delivering space missions at lower expenditures in comparison to its American and Russian counterparts. Also, unlike the aforementioned countries, India lacks teeth in matters of an extensive piece of legislation for its native space missions.

The general apathy requires a systematic overhaul. On account of holistic globalization, “…cooperation is fundamentally important to competition in today’s competitive and shrinking world.” Varying provisos relating to antitrust, differing from country to country can be a cause of concern. In F. Hoffman La-Roche Ltd. v. Empagran S.A., the respondents, appearing before the U.S. Supreme Court, had mulled over the viability of an international competition law, to bridge the differences in matters of extraterrestrial jurisdiction.

International aw, in its current state, has often posed challenges to space explorations, more so when private parties are involved. This problem is exacerbated by the lack of incentives and resource mobilisation. The need for an international antitrust framework is crucial to invigorate the private players to continue harnessing the spatial resources in a fair manner.

Privatization and the Need for Antitrust Laws

The cost for space exploration activities, whether manned or unmanned, is immense. Restricting the operations merely in the hands of the governmental organizations is detrimental to the spirit of expansion and innovation. The market for space tourism is avant garde and lucrative, at the same time. An international antitrust law body shall only help smoothen the process of incentivization of such private operations.

Besides, any country which would develop a comprehensive antitrust measure for private space explorations might effectively end up being a model nation for the other States. In the context of this discussion, the United States of America has been most flexible in matters of its antirust policies. Countries like Russia and India and other major players must take the mantle of building a sturdy, regular approach of antitrust correspondence with their space activities.

If private players end up becoming an important component of the space exploration sector, the presence of an international antitrust framework shall not only ensure innovation, but also help prevent patent right violations and patent trolls in space activities. The system needs to be adroit with the constant changes and upgrade itself accordingly.

Conclusion

In a highly technical and financially draining field like space exploration, the prime boost for companies and organizations to operate is one of specific incentives. Albeit, the international law framework has not been welcoming to private persons. It is time for countries to discuss the possibility of an antitrust regime, which is inclusive of space explorations too. Even though governments represent the “will of the people” and invest heavily in space research and varying degrees of space operations, an effective piece of legislation for antitrust matters relating to space shall grant due confidence to companies as well.

#### Scenario 1 is Tech –

#### Tech innovation solves extinction from almost everything VIA food insecurity.

Baum 18, [Seth Baum, Global Catastrophic Risk Institute, 2018. “Resilience to Global Catastrophe.” <https://beta.irgc.org/wp-content/uploads/2018/12/Baum-for-IRGC-Resilience-Guide-Vol-2-2018.pdf>] Recut Sachin

There are several GCRs that are believed to threaten the global food supply. For example, nuclear war burns cities and other areas, sending large amounts of particulate matter into the stratosphere, which then blocks incoming sunlight worldwide, disrupting agriculture. An India-Pakistan nuclear war scenario has been found to cause reductions to major crop yields in the range of 10 to 50% (see Xia, Robock, Mills, Stenke, & Helfand, 2015). Large asteroid and comet collisions and volcano eruptions can have similar effects. Other global food supply threats could include crop pathogens and abrupt global warming. These various catastrophes could create relatively abrupt shocks to the global food supply, on time scales of years to decades. Slower events, such as gradual global warming and the depletion of agriculturally significant natural resources (such as phosphate rock), can also have large effects on the food supply, though they offer more opportunity for civilization to adapt. Several measures can be taken to increase resilience to global food supply catastrophes (Baum, Denkenberger, Pearce, Robock, & Winkler, 2015). The simplest is to make the most of the remaining food supply. In particular, crops can be shifted from livestock feed to direct human consumption. Under present (non-catastrophe) conditions, bypassing livestock could yield enough calories for four billion people (Cassidy, West, Gerber, & Foley, 2013). Post-catastrophe, this figure could be substantially reduced, but it may nonetheless help keep many people alive. Another measure is to stockpile food prior to the catastrophe. In principle, the amount of food that can be stockpiled is virtually unlimited. In practice, however, food stockpiling is expensive, laborintensive, and cuts into the pre-catastrophe food supply. Food stockpiles are best suited to a more limited role for more moderate catastrophes, especially those of short duration. Existing food stockpiles could support the global human population for an estimated 4-7 months (Denkenberger & Pearce, 2014), which is insufficient for many global catastrophe scenarios. Another potential role for food stockpiles is to ensure the survival of a select population, such as in continuity of government facilities, survivalist communities, or dedicated refuges designed to ensure an MVP. A third measure is to develop capacity to produce food in unconventional ways. For example, if sunlight becomes unavailable, it may be possible to produce food via other means (Denkenberger & Pearce, 2014). Ultimately, food does not need sunlight—it needs energy. Non-sunlight energy sources could include fossil fuels, nuclear power, and energy stored in trees and other biomass. This option is attractive because it can succeed for catastrophes of all sizes with no expensive reductions in pre-catastrophe food supply. However, it may require technological development and institutional support that thus far has not been made. Thus, this is the sort of policy measure that could result from greater emphasis on resilience to global catastrophe.

**Space innovation solves climate, disasters, pandemics---impact filter**

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Technological progress now offers us a vision of a remarkable future. The advances that have brought us onto an unsustainable pathway have also raised the quality of life dramatically for many, and have unlocked scientific directions that can lead us to a safer, cleaner, more sustainable world. With the right developments and applications of technology, in concert with advances in social, democratic, and distributional processes globally, progress can be made on all of the challenges discussed here. Advances in renewable energy and related technologies, and more efficient energy use—advances that are likely to be accelerated by progress in technologies such as artificial intelligence—can bring us to a point of zero-carbon emissions. New manufacturing capabilities provided by synthetic biology may provide cleaner ways of producing products and degrading waste. A greater scientific understanding of our natural world and the ecosystem services on which we rely will aid us in plotting a trajectory whereby critical environmental systems are maintained while allowing human flourishing. Even advances in education and women’s rights globally, which will play a role in achieving a stable global population, can be aided specifically by the information, coordination, and education tools that technology provides, and more generally by growing prosperity in the relevant parts of the world. There are catastrophic and existential risks that we will simply not be able to overcome without advances in science and technology. These include possible pandemic outbreaks, whether natural or engineered. The early identification of incoming asteroids, and approaches to shift their path, is a topic of active research at NASA and elsewhere. While currently there are no known techniques to prevent or mitigate a supervolcanic eruption, this may not be the case with the tools at our disposal a century from now. And in the longer run, a civilization that has spread permanently beyond the earth, enabled by advances in spaceflight, manufacturing, robotics, and terraforming, is one that is much more likely to endure. However, the breathtaking power of the tools we are developing is not to be taken lightly. We have been very lucky to muddle through the advent of nuclear weapons without a global catastrophe. And within this century, it is realistic to expect that we will be able to rewrite much of biology to our purposes, intervene deliberately and in a large-scale way in the workings of our global climate, and even develop agents with intelligence that is fundamentally alien to ours, and may vastly surpass our own in some or even most domains—a development that would have uniquely unpredictable consequences.

#### Scenario 2 is Space Coop –

#### US violations of the OST wreck international coop---application is key to solve.

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\*This is a transcript of a video!

So, to better understand our analysis through this competition lowlands, we will discuss about NASA’s unilateralism and the USA’s unilateralism which is probably debatable if not **controversial**, but we can't really do without because at the moment multilaterally at the international level, there is a little bit of **an impasse**. However, this mercantilist dynamism and momentum needs a little bit of **regulation** to ensure space ecosystem **sustainability**. And therefore, we propose a pragmatic solution based on competition law and the competition law framework. As you all know, the space sector is thriving indeed, **due to this aggressive and recent unilateralism**. However, the article six of the Outer Space Treaty **does not compensate enough** for this commercialization. And therefore we have a situation of legal void, **where the private sector** is navigating through these loopholes, generating this at the **international** level situational **fragmentation** due in part to either customary practice or law or to National Space legislations which are potentially conflicting. This is very timely because recently Nokia manifested interest in establishing telecommunications on the moon, which reminds us of the antitrust measures back in the day in the telecommunications sector, which was very beneficial in opening up the market to competition and other actors and lowering prices, and diversification. Furthermore, in the GAFA world, we have these recent antitrust hearings, with the outcome of a potential lawsuit against Google and its monopoly. In with regards to Amazon cloud services, there is a new space policy department this is interesting because they're interested into building the cloud infrastructure in space, as well as with Blue Origin, building space infrastructure might be there might be some monopolistic aspirations behind too. To apply our competition lens let's look for example at the Artemis accords. We have all these principles such as mutual interest, benefits for all humankind, common spirit cooperation, global benefits of space commerce, collective interest etc and compliance with the Outer Space Treaty principles which go even deeper you know, such as equality and nondiscrimination etc. So competition law is very interesting here because it provides with a pragmatic solution, a practical tool, it's a utilitarian solution to help ensure the accomplishment of these principles. Basically, we see that we have already all the necessary ingredients for competition law within the accords, for instance, establishing best practices for governance, or sustainable and beneficial use of space for all humankind. Nations they can **interact contractually with the private sector**. All these are good ingredients for establishing a competition law framework. But because there is a path nonetheless, some issues need clarification, such as entry barriers to assist in our economy based on interoperability, what is interoperability will I turn issues for instance, preclude international competition? So for this, you need more clarification. Now in terms of space resources, what needs more clarification is the term support what do we mean by critical support, which can generate benefit for humankind and sustainable resources utilization, in terms of deconfliction activities? Can due regard be applicable to our fair competition purposes? Do we need an economic based interpretation methodology in this new context of space commercialization. How about harmful interference? Since in this context of trade war, interference can be used for commercial purposes? Therefore, how about anti competitive behavior? Could it be a source of harmful interference? Should we regulate this? Here we address the issues of safety zones. Should we expect a safety zones rush or race on the moon? Or will the moon become a haven for Artemis accords clubs, safety zones, and exclusive practices? What about the others? Therefore, there's a need to define how the Artemis accords signatories committed to complying with the principle of free access as opposed to an exclusive Artemis Club. And this should be needed because for instance, exclusive practices can be translated into interim directives. If we take for example, NASA interim directive on planetary protection, which basically unilaterally divides the moon into two categories. Therefore, multilateral venues need to fast forward a little bit because if not, they might be left out. For instance, **NASA is already promoting lunar samples** commerce **unilaterally outside of the UN**, with specific contractual instructions, procurement prices. And yes, it's benefiting the whole of humankind. But it's a second play. **It's Take it or leave it**, like it or not. This is good for us. Because it promotes open competition. The jackpot, you see, there's a need indeed **to regulate** and to regulate **with a specific space competition law**. And why? Because in space four, we have these principles, these higher ethical principles with which need protection, and therefore you need a specific space competition law framework to protect them. And now is a good timing to regulate to start discussing already, because this **unilateralism** generates **multilateralism** and this artemus club with their own interpretations. So **now is the right timing before it's too late** or before there's not enough room at the table to negotiate and come up with **multilateral approaches**. See, there's already debate at the international level. For instance, the **executive order of the United States** say that space mining should be enabled only by National Space legislation, and that space is not a place for global commons. In contrast, Canada reacted well Canadian scholars reacted and said that **no**, space is a place for global commons. And space mining should only be regulated or enabled through an international regime or a multilateral agreement. And on top of that, these scholars also disagree on what benefits sharing should be. They advocate monetary benefit sharing while on the contrary, the Hague resources group say that no, it doesn't have to include monetary benefits. And so we find ourselves within this international impasse or lex butser is mercato. Aria is based on National Space regulation instead of international regulation, and to bridge the gap. We propose this space antitrust or competition of framework together with governance based on business language. It is our opinion that this could be a relevant solution because it addresses issues of space competition law such as **collusion, anti-competitive behavior, dominance**, etc. And also antitrust issues such as **monopoly**, oligopoly, etc. It helps containing excess while enabling market space market expansion and sustainability and also preventing eventually a fork McMooney situation and history repeating and on that constructive note, I would like to thank you.

#### Space cooperation solves – Militarization, Warming, Debris, and Natural Disasters.

Wemer 18 [(David A. Wemer is the Director & Managing Editor of the Fellowship Program at Young Professionals in Foreign Policy (YPFP). He formerly served as an Assistant Managing Editor, and the 2016 Europe Fellow, of the Fellowship Program. “Can International Cooperation in Space Survive Geopolitical Competition on Earth?” 11/20/18. <https://www.atlanticcouncil.org/blogs/new-atlanticist/can-international-cooperation-in-space-survive-geopolitical-competition-on-earth>)] Sachin

One hundred and eighteen seconds after launching from southern Kazakhstan, Nick Hague found himself plunging toward Earth instead of heading for the stars. On October 11, the NASA astronaut was jettisoned from his shuttle, along with his Russian crewmate Aleksey Ovchinin, after one of the side boosters on their Soyuz rocket crashed into their second-stage boosters, rather than detaching from the system. Both astronauts safely returned to Earth, a welcome relief given the tragically long list of launch accidents. Hague and Ovchinin’s mission was already something of an anomaly in 2018. At a time when Russia and the United States spend most of their time preparing for conflict, space remains one of the few areas where both countries cooperate extensively. The two astronauts were headed to the International Space Station (ISS), an experiment in international cooperation launched twenty years ago on November 20, 1998, which has housed astronauts from more than ten countries. Ever since the end of the NASA Space Shuttle program in 2011, US astronauts have relied on Russian Soyuz rockets to get them to the ISS, a startling dependence given the tension between both countries. NASA never envisioned this arrangement to be anything more than temporary as it hopes to send future US astronauts on US private launch systems as soon as sometime next year. The problem with the October 11 launch came just a month after astronauts on the ISS had to plug a small hole in a Soyuz return vehicle docked at the station with “rags and other trash.” Signaling growing discord in the relationship, Dmitry Rogozin, the head of Roscosmos, the state corporation responsible for Russia’s space flight and cosmonautics program, shifted blame for the incident from potential assembly flaws on the Russian-made Soyuz craft to outrageous claims of sabotage by an ISS crewmember (Roscosmos and NASA now stress that no ISS crewmembers are being charged with any wrongdoing). NASA Administrator Jim Bridenstine has been quick to dismiss suggestions that NASA has doubts about Roscosmos’ capabilities, but US-Russian space relations, once the bedrock of international space cooperation, have clearly hit bumps in the road. The problems with the Russian Soyuz launcher come at a time when international cooperation on the final frontier appears to be in retreat. Space has been a cornerstone of US-Russian cooperation since the last days of the Cold War, but it may not be able to weather continued tension between Moscow and Washington, especially as NASA grows wary of Russian technical competence. The United States has also shown the cold shoulder to the new kid in town: China. Since the mid-1990s, NASA has been required to seek congressional approval before undertaking any cooperation or contact with Chinese government officials. This rule has effectively limited NASA’s contact with the fastest-growing space power to discussions on civilian aerospace and earth science. While NASA continues to push for greater contact, the Trump administration’s growing displeasure with Beijing—along with very real concerns about intellectual property theft—makes it unlikely that Washington will warm to the idea of extensive cooperation with Beijing in space anytime soon. At the same time, space has dramatically shifted from a domain for science and exploration to a vitally important theater for economic and military expansion. Satellite orbits are now vital economic resources for countries around the world and US President Donald J. Trump’s stated desire for a new “Space Force” reflects a very real understanding amongst militaries that the final frontier is as much of a potential conflict zone as air, sea, or land. With an endorsement from the National Space Council, a new space-focused military branch looks imminent for the United States, which could further push Washington away from cooperating with other space partners, especially potential adversaries China and Russia. International cooperation has been the cornerstone of US forays into space since the early days of the Cold War. President Dwight D. Eisenhower specifically created NASA as a civilian agency in order to prevent the domination of space activities by the US military. NASA has nearly eight hundred active international agreements, which are vital for powering research in physics, chemistry, medicine, biology, and environmental science. This cooperation will be vital in addressing both space specific problems, such as increasing satellite traffic and dangerous orbital debris, but also in addressing close-to-home threats like climate change and natural disasters. Despite incredible leaps in technology, humanity’s desire to explore and utilize space still requires vast amounts of wealth and expertise, making the pooling of resources with international partners vital to achieving missions. Certainly, NASA will continue its vast cooperation with its natural partners such as Europe, Canada, and Japan. Indeed on November 16, NASA celebrated the arrival of a European-built service module, which will power NASA’s Orion spacecraft in development for possible human exploration of Mars. But the promise of the International Space Station, and indeed much of the cooperation in space, was the ideal that geopolitical competition could be forgotten beyond Earth’s atmosphere. For now, this international cooperation remains in place, as at this moment a German, an American, and a Russian are living 250 miles above the Earth, entirely dependent on each other and cooperation between their governments for their survival. As space becomes more and more intertwined with the global economy and geopolitical competition, humanity risks abandoning the spirit of cooperation and extending the conflicts of the Earth to the stars.

#### Warming leads to extinction---it’s a conflict-multiplier.

**Kareiva 18**, [Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al. (Peter, “Existential risk due to ecosystem collapse: Nature strikes back,” *Futures*, 102)] Sachin

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (climate change, global freshwater cycle, and ocean acidification) do pose existential risks. This is because of intrinsic positive feedback loops, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield surprises. In addition, climate, freshwater, and ocean acidification are all directly connected to the provision of food and water, and shortages of food and water can create conflict and social unrest.

Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields).

Climate change intersects with freshwater resources because it is expected to exacerbate drought and water scarcity, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. Ample clean water is not a luxury—it is essential for human survival. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease.

Finally, ocean acidification is linked to climate change b2ecause it is driven by CO2 emissions just as global warming is. With close to 20% of the world’s protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases storm frequency and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, coastal communities will be exposed to unprecedented storm surge—and may be ravaged by recurrent storms.

A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition “rare” (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare extreme events because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people.

4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes

Humans are remarkably ingenious, and have adapted to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm.

In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, the Earth’s climate system is rife with positive feedback loops. In particular, as CO2 increases and the climate warms, that very warming can cause more CO2 release which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios.

Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002).

Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that forest fires will become more frequent and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This catastrophic fire embodies the sorts of positive feedbacks and interacting factors that could catch humanity off-guard and produce a true apocalyptic event. Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming.

#### Space arms races are terrible---go nuclear, causes communication blackouts, conflict.

Tisdall 20, [Simon Tisdall, (Simon Tisdall is a foreign affairs commentator. He has been a foreign leader writer, foreign editor and US editor for the Guardian), 8-1-2020, "A nuclear arms race in space? It seems we've learned nothing from Hiroshima," Guardian, <https://www.theguardian.com/commentisfree/2020/aug/02/a-nuclear-arms-race-in-space-it-seems-weve-learned-nothing-from-hiroshima//> Accessed: 1-31-22] Sachin

---At: Nuclear K

As the world marks the 75th anniversary of the dropping of the atom bomb on Japan, it must wake up to the new rearmament

[Image Omitted]

The mushroom cloud over Nagasaki in August 1945. Photograph: Nagasaki Atomic Bomb Atomic Bomb Museum/EPA

Russia’s apparent test-firing of an anti-satellite weapon in outer space on 15 July, as alleged by the US and Britain, could be dismissed as another of Vladimir Putin’s annoying provocations. That would be a mistake. The alleged new space weapon should be seen in the broader context of a rapidly evolving, hi-tech, high-risk international arms race involving all the major nuclear powers that, largely undiscussed, is spinning out of control.

This week sees the 75th anniversary of the atomic bomb attacks on Hiroshima and Nagasaki that killed over 200,000 people, but the absence of public debate or a sense of alarm about the grim advent of sophisticated new nuclear, hypersonic, cyber and space weapons is striking. In the decades after Hiroshima, noisy anti-nuclear “ban the bomb” protests by CND and others spanned the globe. Today, by comparison, an eerie silence reigns.

The battle for outer space is only getting going – yet deserves immediate attention. Russia’s alleged development of anti-satellite weapons is almost certainly matched by the US and China, and undermines past undertakings about the peaceful use of space. Christopher Ford, US assistant secretary of state for international security and non-proliferation, warned last week that Russia and China had already turned space into a “war-fighting domain”.

“What [the Russians] are doing is signalling to the world that they’re able to destroy satellites in orbit with other satellites,” Ford said. “This is the sort of thing that could get out of hand and go very badly rather quickly.” The UK called the alleged test “a threat to space systems on which the world depends” – meaning use of such weapons could, in theory, produce an instant global security and communications blackout.

[Advertisement Omitted]

Yet in relaunching US space command last year, Donald Trump also pointed to space as the next great-power battlefield. Nato secretary-general Jens Stoltenberg says the alliance will not deploy weapons in space but is obliged to defend its interests, which include 2,000 orbiting satellites. For Nato, too, space is now an “operational domain”.

New and “improved” nuclear weapons are proliferating in parallel with the race for space. According to the Stockholm International Peace Research Institute (Sipri), nine states – the US, Russia, China, Israel, the UK, France, India, Pakistan and North Korea – together possess about 13,400 weapons. While the overall total is falling, “retired” warheads and bombs are being replaced by more powerful, versatile devices, such as smaller, “use-able” US battlefield nukes.

“All these states are either developing or deploying new weapon systems or have announced their intention to do so,” Sipri’s annual report said. The US and Russia each possessed about 1,550 deployed, long-range weapons, while China had about 300. Both the US and Russia were spending more and placing greater reliance on nuclear weapons in future military planning, it said, while China was rushing to catch up.

“China is in the middle of a significant modernisation of its nuclear arsenal. It is developing a so-called nuclear triad for the first time, made up of new land- and sea-based missiles and nuclear-capable aircraft. India and Pakistan are slowly increasing the size and diversity of their nuclear forces,” Sipri reported. Meanwhile, North Korea continued to prioritise its military nuclear programme, while conducting “multiple” ballistic missile tests.

Trump looks set to scupper New Start on the spurious ground that it does not reduce China’s much smaller arsenal.

“Instead of planning for nuclear disarmament, the nuclear-armed states appear to plan to retain large arsenals for the indefinite future, are adding new nuclear weapons, and are increasing the role such weapons play in their national strategies,” a Federation of American Scientists survey said. It estimated about 1,800 warheads were kept on high alert, ready for use at short notice.

Russia claims to lead the world in developing hi-tech weaponry. Speaking in July, Putin boasted that Russia’s navy was being equipped with nuclear-powered hypersonic cruise missiles, which supposedly have unlimited range, and submarine-launched underwater nuclear drones.

Despite celebrated speeches supporting a nuclear-free world, Barack Obama authorised a $1.2tn plan to upgrade America’s nuclear triad while pursuing strategic arms reductions via the 2010 New Start treaty with Russia. Trump has doubled down, at the same time abandoning arms control pacts. His 2018 nuclear posture review proposed an extra $500bn in spending, including $17bn for low-yield, battlefield weapons.

Trump looks set to scupper New Start, which expires in February, on the spurious ground that it does not reduce China’s much smaller arsenal (which it was never intended to do). He has previously reneged on the 2015 Iran nuclear treaty, the 1987 Intermediate-range Nuclear Forces treaty, and is said to favour resumed nuclear testing in Nevada in defiance of the 1996 Comprehensive Nuclear-Test-Ban treaty.

Like Britain and other signatories, the US continues to fail to fulfil its obligation under the 1970 Nuclear Non-Proliferation treaty “to pursue nuclear disarmament aimed at the ultimate elimination of nuclear arsenals”. Despite its acute financial situation, Britain remains committed to replacing its Trident missile system at an estimated cost of £205bn over 30 years.

While nuclear weapons have not been used since 1945, great-power military flashpoints are increasing the risk that they might be. These potential triggers include the South China Sea, Taiwan, the India-Pakistan and India-China borders, the US-Israel-Iran conflict, North Korea and Ukraine.

Heightened international tensions and collapsing arms-control regimes only partly explain the accelerating pace of nuclear rearmament. Resurgent nationalism, authoritarian rightwing populism, revived or new territorial rivalries (as in space), the bypassing of the UN and multilateral institutions, and a shifting economic and geopolitical power balance are all aggravating factors.

But so, too, is amnesia. Seventy-five years after Armageddon was visited upon the people of Japan, the world seems to have forgotten the truly existential horror of that moment. A history lesson, and a renewed debate, are urgently needed.

#### Communication systems check disease, disasters, tyranny and more.

Eagleman 10, [Dr. David; 11/9/2010; PhD in Neuroscience @ Baylor University, Adjunct Professor of Neoroscience @ Stanford University, Former Guggenheim Fellow, Director of the Center for Science and Law, BA @ Rice University; “Six Ways The Internet Will Save Civilization”; <https://www.wired.co.uk/article/apocalypse-no>]

Many great civilisations have fallen, leaving nothing but cracked ruins and scattered genetics. Usually this results from: natural disasters, resource depletion, economic meltdown, disease, poor information flow and corruption. But we’re luckier than our predecessors because we command a technology that no one else possessed: a rapid communication network that finds its highest expression in the internet. I propose that there are six ways in which the net has vastly reduced the threat of societal collapse.

Epidemics can be deflected by telepresence

One of our more dire prospects for collapse is an infectious-disease epidemic. Viral and bacterial epidemics precipitated the fall of the Golden Age of Athens, the Roman Empire and most of the empires of the Native Americans. The internet can be our key to survival because the ability to work telepresently can inhibit microbial transmission by reducing human-to-human contact. In the face of an otherwise devastating epidemic, businesses can keep supply chains running with the maximum number of employees working from home. This can reduce host density below the tipping point required for an epidemic. If we are well prepared when an epidemic arrives, we can fluidly shift into a self-quarantined society in which microbes fail due to host scarcity. Whatever the social ills of isolation, they are worse for the microbes than for us.

The internet will predict natural disasters

We are witnessing the downfall of slow central control in the media: news stories are increasingly becoming user-generated nets of up-to-the-minute information. During the recent California wildfires, locals went to the TV stations to learn whether their neighbourhoods were in danger. But the news stations appeared most concerned with the fate of celebrity mansions, so Californians changed their tack: they uploaded geotagged mobile-phone pictures, updated Facebook statuses and tweeted. The balance tipped: the internet carried news about the fire more quickly and accurately than any news station could. In this grass-roots, decentralised scheme, there were embedded reporters on every block, and the news shockwave kept ahead of the fire. This head start could provide the extra hours that save us. If the Pompeiians had had the internet in 79AD, they could have easily marched 10km to safety, well ahead of the pyroclastic flow from Mount Vesuvius. If the Indian Ocean had the Pacific’s networked tsunami-warning system, South-East Asia would look quite different today.

Discoveries are retained and shared

Historically, critical information has required constant rediscovery. Collections of learning -- from the library at Alexandria to the entire Minoan civilisation -- have fallen to the bonfires of invaders or the wrecking ball of natural disaster. Knowledge is hard won but easily lost. And information that survives often does not spread. Consider smallpox inoculation: this was under way in India, China and Africa centuries before it made its way to Europe. By the time the idea reached North America, native civilisations who needed it had already collapsed. The net solved the problem. New discoveries catch on immediately; information spreads widely. In this way, societies can optimally ratchet up, using the latest bricks of knowledge in their fortification against risk.

Tyranny is mitigated

Censorship of ideas was a familiar spectre in the last century, with state-approved news outlets ruling the press, airwaves and copying machines in the USSR, Romania, Cuba, China, Iraq and elsewhere. In many cases, such as Lysenko’s agricultural despotism in the USSR, it directly contributed to the collapse of the nation. Historically, a more successful strategy has been to confront free speech with free speech -- and the internet allows this in a natural way. It democratises the flow of information by offering access to the newspapers of the world, the photographers of every nation, the bloggers of every political stripe. Some posts are full of doctoring and dishonesty whereas others strive for independence and impartiality -- but all are available to us to sift through. Given the attempts by some governments to build firewalls, it’s clear that this benefit of the net requires constant vigilance.

Human capital is vastly increased

Crowdsourcing brings people together to solve problems. Yet far fewer than one per cent of the world’s population is involved. We need expand human capital. Most of the world not have access to the education afforded a small minority. For every Albert Einstein, Yo-Yo Ma or Barack Obama who has educational opportunities, uncountable others do not. This squandering of talent translates into reduced economic output and a smaller pool of problem solvers. The net opens the gates education to anyone with a computer. A motivated teen anywhere on the planet can walk through the world’s knowledge -- from the webs of Wikipedia to the curriculum of MIT’s OpenCourseWare. The new human capital will serve us well when we confront existential threats we’ve never imagined before.

Energy expenditure is reduced

Societal collapse can often be understood in terms of an energy budget: when energy spend outweighs energy return, collapse ensues. This has taken the form of deforestation or soil erosion; currently, the worry involves fossil-fuel depletion. The internet addresses the energy problem with a natural ease. Consider the massive energy savings inherent in the shift from paper to electrons -- as seen in the transition from the post to email. Ecommerce reduces the need to drive long distances to purchase products. Delivery trucks are more eco-friendly than individuals driving around, not least because of tight packaging and optimisation algorithms for driving routes. Of course, there are energy costs to the banks of computers that underpin the internet -- but these costs are less than the wood, coal and oil that would be expended for the same quantity of information flow.

The tangle of events that triggers societal collapse can be complex, and there are several threats the net does not address. But vast, networked communication can be an antidote to several of the most deadly diseases threatening civilisation. The next time your coworker laments internet addiction, the banality of tweeting or the decline of face-to-face conversation, you may want to suggest that the net may just be the technology that saves us.

#### Disease risks extinction.

Bar-Yam 16, [Yaneer Bar-Yam, Founding President of the New England Complex Systems Institute, “Transition to extinction: Pandemics in a connected world,” NECSI (July 3, 2016), <http://necsi.edu/research/social/pandemics/transition>]

Watch as one of the more aggressive—brighter red — strains rapidly expands. After a time it goes extinct leaving a black region. Why does it go extinct? The answer is that it spreads so rapidly that it kills the hosts around it. Without new hosts to infect it then dies out itself. That the rapidly spreading pathogens die out has important implications for evolutionary research which we have talked about elsewhere [1–7].¶ In the research I want to discuss here, what we were interested in is the effect of adding long range transportation [8]. This includes natural means of dispersal as well as unintentional dispersal by humans, like adding airplane routes, which is being done by real world airlines (Figure 2).¶ When we introduce long range transportation into the model, the success of more aggressive strains changes. They can use the long range transportation to find new hosts and escape local extinction. Figure 3 shows that the more transportation routes introduced into the model, the more higher aggressive pathogens are able to survive and spread.¶ As we add more long range transportation, there is a critical point at which pathogens become so aggressive that the entire host population dies. The pathogens die at the same time, but that is not exactly a consolation to the hosts. We call this the phase transition to extinction (Figure 4). With increasing levels of global transportation, human civilization may be approaching such a critical threshold.¶ In the paper we wrote in 2006 about the dangers of global transportation for pathogen evolution and pandemics [8], we mentioned the risk from Ebola. Ebola is a horrendous disease that was present only in isolated villages in Africa. It was far away from the rest of the world only because of that isolation. Since Africa was developing, it was only a matter of time before it reached population centers and airports. While the model is about evolution, it is really about which pathogens will be found in a system that is highly connected, and Ebola can spread in a highly connected world.¶ The traditional approach to public health uses historical evidence analyzed statistically to assess the potential impacts of a disease. As a result, many were surprised by the spread of Ebola through West Africa in 2014. As the connectivity of the world increases, past experience is not a good guide to future events.¶ A key point about the phase transition to extinction is its suddenness. Even a system that seems stable, can be destabilized by a few more long-range connections, and connectivity is continuing to increase.¶ So how close are we to the tipping point? We don’t know but it would be good to find out before it happens.¶ While Ebola ravaged three countries in West Africa, it only resulted in a handful of cases outside that region. One possible reason is that many of the airlines that fly to west Africa stopped or reduced flights during the epidemic [9]. In the absence of a clear connection, public health authorities who downplayed the dangers of the epidemic spreading to the West might seem to be vindicated.¶ As with the choice of airlines to stop flying to west Africa, our analysis didn’t take into consideration how people respond to epidemics. It does tell us what the outcome will be unless we respond fast enough and well enough to stop the spread of future diseases, which may not be the same as the ones we saw in the past. As the world becomes more connected, the dangers increase.¶ Are people in western countries safe because of higher quality health systems? Countries like the U.S. have highly skewed networks of social interactions with some very highly connected individuals that can be “superspreaders.” The chances of such an individual becoming infected may be low but events like a mass outbreak pose a much greater risk if they do happen. If a sick food service worker in an airport infects 100 passengers, or a contagion event happens in mass transportation, an outbreak could very well prove unstoppable.

#### Natural disasters cause widespread instability without response capabilities---risks extinction.

Tipson ’13, [“Natural Disasters as Threats to Peace”, Frederick Tipson – Frederick S. Tipson is an adviser to the USIP Center of Innovation on Science, Technology, and Peacebuilding, BA in history from Stanford, an MA in international relations from Yale, and JD and PhD degrees from the University of Virginia, United States Institute of Peace, Special Report 324, Pub: February 2013, <http://www.usip.org/sites/default/files/resources/Natural%20Disasters%20as%20Threats%20to%20Peace%20SR324.pdf>] Sachin

The incidence of military conflicts between states is at a historic low; even the number of conflicts within states has declined steeply since the twentieth century.51 However, both trends could be slowed or reversed by increased vulnerabilities to natural disasters and the limits of political and economic capacity to deal with them. How should the challenges ahead be framed in terms of U.S. national security and the larger “threats to the peace”? The likelihood is that over time large groups of people will become ecologically displaced persons or “environmental refugees,” forced from their historic homelands and needing relocation to more hospitable places. Citizen Safety Most governments place their highest priority on national security, which begins with ensuring the physical safety of their citizens, or as John Jay famously put it in The Federalist: “Among the many objects to which a wise and free people find it necessary to direct their attention, that of providing for their safety seems to be the first.”52 While they are used to thinking of such safety in terms of protection from attacks by military or terrorist adversaries, Americans also regard their fundamental security as dependent on access to reliable supplies of air, water, food, medicine, and shelter.53 All would likely place these subsistence needs above any threat currently on the horizon, foreign or domestic. However, it is leaders—thought leaders as well as political leaders—who define the priorities for government policy and expenditures in dealing with what they perceive as the greatest threats to the country and its citizens. Such definitions of national security generally arise as narratives developed in the course or aftermath of major international attacks or threats of attack. Historical turning points in these narratives over the last hundred years include, for example, the German attacks on U.S. shipping that provoked the country into World War I; the Japanese attack on Pearl Harbor that plunged the United States into World War II; the Berlin crisis, Korean War, and Soviet nuclear tests that intensified the Cold War; and the September 11, 2001, attacks that provoked the U.S. War on Terror. Whether or not all Americans agreed with the security rationales their leaders offered at those times, they provided bold assessments of the threats confronting the country, which gained wide acceptance. Each narrative was a necessary, and apparently sufficient, political basis to enlist political support for executive orders, policies, legislation, appropriations, treaties, and other international commitments that were consistent with the leaders’ justifications. At present there is no reasonable prospect that U.S. leaders would create a national security narrative focused on the cumulative threats from an overstressed planet.54 To mobilize popular support for the major initiatives necessary to reduce foreseeable risks, U.S. leaders would eventually have to shift their characterizations of such threats from environmental to existential and from futuristic (after 2050) to imminent (before 2020). That shift is unlikely until Americans experience a pattern of severe crises that would shift popular perceptions and political attitudes in decisively different directions. No one wants to contemplate the horrific disasters that might drive such a shift in attitudes, especially when the destruction from Katrina and Sandy seem not to have had such an effect on most political leaders. Political resistance to the recognition of these likely threats is reinforced by a suspicion that those who highlight them are also seeking to justify major government interventions and expenditures, involving severe changes in lifestyles. References to global warming, or even to obvious climate changes, sound to some audiences as code words to justify carbon caps and oil taxes. Therefore this report assumes that such mitigation programs are not foreseeable in time to avoid the climatic, economic, and demographic consequences of current trends. Indeed, it is because these trends will not be changed in time that steps must be taken to adapt to their likely effects. U.S. political and thought leaders need to fulfill their highest responsibility—for the safety of citizens—by beginning to consider a range of risk reduction policies, infrastructure investments, and preparedness strategies, including the necessary legislative and budgetary changes, that might constitute an approach to national security aimed at reducing the direct and secondary consequences of natural disasters. Whether or not the necessary stoic and heroic steps are all politically palatable, the larger arguments for them should at least be actively under current debate. As Stephen Flynn has emphasized, most of these steps would not only reduce U.S. vulnerability to extreme natural events but would also reduce the opportunities for terrorists to exploit the same vulnerabilities.55 U.S. political and thought leaders need to fulfill their highest responsibility—for the safety of citizens—by beginning to consider a range of risk reduction policies, infrastructure investments, and preparedness strategies. How these competing political pressures will play out depends not only on the timing and locations of disasters but also on how soon the growing public perception of our vulnerabilities becomes a political reality. The combination in 2012 of major tornados, midwestern drought, Texas floods, Hurricane Isaac, western wildfires, Arctic ice depletion, and Tropical Storm Sandy could mark the beginning of a sea change in the electorate’s expectations of present and future exposure to natural disasters. In that event, the hardest challenge for U.S. leaders may well be to prevent the country from turning inward to focus on domestic priorities and resisting involvement in the crises of other countries or regions. Such isolationism could be expressed through intensified calls for energy independence, food selfsufficiency, foreign assistance cutoffs, and even military retrenchment. Reversing decades of generosity and pragmatism, donor fatigue and domestic needs could generate a new version of an “America First” constituency that opposes all such international engagement and punishes at the polls any politician who supports it.

Collective Containment U.S. leaders also cannot ignore the national security implications of the most serious risks of disaster beyond our borders. The safety of U.S. citizens is inextricably bound through the global economy with the course of environmental events in other parts of the world. Disasters or extreme conditions that degrade major agricultural areas (Russian, Australian, or Argentinean wheat fields, Japanese, Burmese, Philippine rice), disrupt for prolonged periods key manufacturing, transportation, or communications infrastructure (greater Bangkok, Bosporus, European airspace), or create immense casualties among large stressed populations (pandemics in Pakistan, Brazil, Nigeria) could affect the stability of entire regions. The severe degradation of a megacity could snowball into wider instability and conflict if not managed collaboratively. The sooner and more deliberately U.S. leaders can articulate geographic, cultural, or economic justifications for targeting scarce assistance, the sooner they are to be persuasive to U.S. citizens. Political preparation is equally required of other governments and populations. If disasters multiply, U.S. influence with these countries will likely depend on the level of U.S. engagement, generosity, and leadership in promoting a sense of global solidarity through an agenda for collaboration on resilience, relief, and relocation options. For this purpose, the U.S. government will need to complement its domestic security rationale with a compelling diplomatic narrative that advocates the needs and priorities for dealing with events that might otherwise spark major confrontations. The alternative could well be aggressive measures by governments, desperate for necessities, to bypass market allocations or seize supplies by intercepting transports, deploying covert operations, or even initiating outright invasions. A series of functionally focused collaborations to identify and manage key risks could be indispensable to contain the political consequences of future extreme events. Whether the Security Council, the G-20, the World Health Organization, or some new or combined political coalition would be the locus for such negotiated understandings is unclear. But the likelihood is that all international institutions will have to elevate their focus and resources to address disaster scenarios and environmental vulnerabilities. The security agendas of politicians, policymakers, and intelligence personnel will likely be distracted, for the time being, by perceived dangers from rogue states armed with nuclear weapons, failed states and ungoverned areas as safe havens for terrorists, and economic criminals, such as cyberburglars, unfair traders, and intellectual property thieves. Meanwhile, the safety and prosperity of the United States, as well as peace throughout the world, increasingly will be endangered by unaddressed vulnerabilities to natural disasters and extreme environmental crises. Contention and conflict could also result from the sudden realization—or opportunistic exaggeration—among large groups of alarmed citizens that **such vulnerabilities are both existential and irreversible.** Given demographic and environmental trends, and the increasing vulnerabilities and probable shortages to be expected within this decade—and certainly before 2030—the threats to the peace from Mother Nature may soon come to dwarf any of the threats posed by mere mortals.

## 1AC---Advocacy

#### Thus, the Plan – Resolved: The United States ought to rule that the anti-competitive appropriation of outer space by private entities is unlawful as it violates the Outer Space Treaty.

CSA – Innovation/Space Elevators DA:

<https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1576&context=law_globalstudies>

#### Unjust means unlawful.

Waters 98, [H. FRANKLIN WATERS, Senior District Judge. Colonia Ins. Co. v. City Nat. Bank, 13 F. Supp. 2d 891 - Dist. Court, WD Arkansas 1998] Sachin

Arkansas law is clear on the issue that in the realm of unjust enrichment, the word "unjust" means "unlawful." "One is not unjustly enriched by receipt of that to which he is legally entitled. \* \* \* No recovery of money received can be based upon unjust enrichment when the recipient can show a legal or equitable ground for keeping it." Halvorson v. Trout, 258 Ark. 397, 403, 527 S.W.2d 573, 577 (1975) (quoting Whitley v. Irwin, 250 Ark. 543, 550-51, 465 S.W.2d 906, 910-11 (1971)). See also, Jackson County Grain Drying Coop. v. Newport Wholesale Electric, Inc., 9 Ark.App. 41, 46, 652 S.W.2d 638, 640 (1983) (no one shall be allowed to unjustly enrich himself at the expense of another; the word "unjustly" means "unlawfully").

#### Prefer---our model allows for educational debates about real world policy---core of the topic---the lit is about various legal policies on appropriation---it’s a term of art from the OST.

## 1AC---Solvency

#### The US allows for unfair commercial appropriation---the aff is key to regulation. Solves arms racing, weaponization, debris, and excessive mining---all while increasing co-op.

Kamboj 20, [Megha Kamboj, 6-1-2020, (Megha is a second-year law student at Maharashtra National Law University in Mumbai, India. Her areas of interest include international law and space law.), "Outer Space: A Victim of Power Competition?," Jurist, <https://www.jurist.org/commentary/2020/06/megha-kamboj-outerspace-power-competition//> Accessed: 2-11-2022] Sachin \*\*brackets in original\*\*

While the world was grappling with the COVID-19 pandemic, US President Donald Trump signed an executive order allowing Americans to have the right to engage in commercial exploration, recovery, and use of resources in outer space. This move by the US government has certainly marked a turning point in the development of international space law. It is the first time a nation has made an explicit statement that it doesn’t view space as a “global commons.” Space powers generally have not been comfortable with viewing space as a common heritage of mankind. With the increase in technology, commercial and political inclination towards space mining is growing. However, is outer space once again a victim of power politics? This article shall focus on the loopholes in existing space law treaties, the increasing competition between the space powers, and the reasons that space mining is attractive to the space powers. Finally, it shall highlight the potential risks of such power competition and the need for a common global governance framework.

The Space Law Treaties

The new executive order builds on the U.S. Commercial Space Launch Competitiveness Act and Space Directive-1. While some reports and experts say that this move has put an end to the decades-long debate created by the 1967 Outer Space Treaty, it has also given birth to other concerns, such as the balance of power and economic gains of the international community.

The Outer Space Treaty has 109 countries as a party to it, including all the major space powers such as the US, UK, and Russia. It is based on the principle of res communis and is considered as the founding pillar of international space law. The language of the treaty has created ambiguity in terms of its implication. It prohibits nations from claiming sovereignty over outer space, including the moon and other celestial bodies, but it does not recognize the private appropriation of space. To cover up the loopholes in the Outer Space Treaty, the Moon Agreement was drafted with an aim to view the moon and its natural resources as a common heritage of mankind. Any exploitation of its resources should be governed by an international regime. Even after so many years, only 18 countries are party to the Moon Treaty. This does not include the major space powers, except India.

The Space Race

This order has received mixed views from various nations. The deputy director-general on international cooperation at Russia’s Space Agency, while criticizing the order, referred it as “colonialism.” As per the statements issued by him,

“Attempts to expropriate outer space and aggressive plans to actually seize territories of other planets hardly set the countries [on course for] fruitful cooperation. There have already been examples in history when one country decided to start seizing territories in its interest—everyone remembers what came of it.”

While Russia criticized the order, it is planning to extract helium from the moon and establish a permanent lunar base by approximately 2025.

The race to explore and exploit outer space resources has increased pace. China claims it will start asteroid exploration by 2025. Luxembourg has adopted a legal framework, on similar lines with the US, to protect property rights over outer space resources. It has also announced that it will mine asteroids and other near-Earth objects in search of rare minerals. Private companies and start-ups like Planetary Resources, Deep Space Industries, ispace, SpaceX, and Kleos Space have also jumped on the bandwagon.

Why Space Mining?

With the advancement in space technology, the concept of space mining is gaining popularity among nations and private players. As resources are depleting on earth, countries are shifting their focus to recovering them from outer space. The main objective of space mining is to supplement resources that are rare and declining on the earth. The moon, Mars, and the asteroid belt in our solar system have an abundance of precious metals, such as iron, nickel, cobalt, copper, tungsten, niobium, and even gold.

The economic edge that space mining offers to various countries and commercial players is very much evident. According to Reuters, a 30-meter-long asteroid can hold around $25 to $50 billion worth of platinum. According to NASA, the asteroid named 16 Psyche is so rich in heavy metals that its estimated worth is $10,000 quadrillion. The platinum group metals are necessary for electronics manufacturing. Metals such as iron, nickel, cobalt, and copper are important raw materials for space factories. In outer space, water in its other forms is available in an ample amount. The water available will not only support human life outside earth, but it also can serve as rocket fuel by breaking down oxygen and hydrogen from the available water. Hence, instead of carrying fuel to space, such asteroids can serve as outer space “fuel stations” for various space missions, cutting the cost involved in such projects. Also, the availability of Helium-3 on the moon provides a clean source of energy. Thus, such opportunities involving a high rate of return available in outer space lure various nations and private companies.

What’s Next?

The question of who owns outer space has become a controversial topic, with countries and private actors looking to seek profits from outer space. The US government, not viewing outer space as “global common,” has made a bold statement against the concept of “space as a heritage of mankind.” This move of the US government has now opened the gates for other nations to draft domestic space laws on similar lines. With the passing of this order, the real space race has begun. It is believed that the concept of res communis, in relation to international space law, limits exploration and innovation.

Such moves by various space powers come with a cost. The fact that companies only based on domestic laws can exploit resources from outer space will create a huge economic disparity between nations. This will lead to a change in economic and power dynamics in the international domain. In the absence of proper regulatory framework, the risk of weaponization of outer space also increases. Outer space needs to be protected from capitalist greed. As the resources available in outer space are exhaustible, it is important to explore outer space with a sustainable development approach. Also, with an increase in space exploration projects, the problem of space junk increases. Hence, it becomes important to carry out activities such as mining in a very systematic and ethical manner, to reduce over-exploitation of the outer space.

It is the joint responsibility of every nation to minimize the competition of the space race and to improve the balance of power. There is an urgent need for a common global governance mechanism for the exploitation and usage of resources from outer space. An approach that is transparent and collaborative is imperative. It has become the need of the hour to adopt methods for peaceful exploitation that will benefit humankind and not turn space into a battlefield. The principle of “cooperation and mutual assistance,” as laid down by the Outer Space Treaty, should be strongly upheld by all the nations – especially the major superpowers.

#### Domestic antitrust works---OST gives states authority over commercial space---most efficient. Creates momentum for an international framework---solves unfair competition and reinvigorates iLaw and the WTO. Uncertainty kills private space and causes international fragmentation.

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‍Introduction

International space law, or what the community of space jurists calls the corpus juris spatialis, consists of international binding rules which apply to governmental entities. The main body of international space law is the Outer Space Treaty (OST) of 1967 (1), which is a treaty of principles, such as, inter alia, benefit sharing, free exploration, equal access, due regard, non-harmful interference, and cooperation. Since its creation, the OST has achieved global consensus and ensured the peaceful use of outer space. However, circumstances are changing as the space sector grows commercially and the role of non-governmental entities becomes more prominent (2). In fact, article VI of the OST -- which provides that States must supervise the activities of non-governmental actors from their respective jurisdiction and that therefore the OST indirectly applies to these private entities through national space legislation -- seems not to suffice anymore (3). Indeed, it leads to fragmentation and issues such as “forum shopping” (4) whereby non-governmental actors seek to incorporate their entities within more permissive jurisdictions, enhancing thus the divisiveness of international legal standards and norms (5). Furthermore, this accelerated privatization dynamic is not only caused by a race towards the acquisition of space resources, but on a new interpretation of article VI of the OST which emerges as an adaptive mechanism, opening opportunities for further regulation on commercial space when needed, through national law (6).

Commercial Space Law Context

Given the context supra, the observed trend is that a growing number of divergent national laws are fragmenting the main international body of space law to protect domestic geopolitical and commercial interests (7). The legal void contained within international space law gave enough room to States to further regulate the commercial activities of their nationals according to their interests, under the condition that these national legislations comply with the applicable law and the rules of interpretation of international treaties (8). However, it is debated today whether certain legislations are departing from these requirements and, interestingly, there seems to be no right or wrong answer as we simply tread into unknown legal territory (9). To illustrate this point, the example of the non-appropriation principle, enshrined within article II of the OST, can be used (10). Conventionally, it is considered that no State can claim sovereignty over celestial bodies or their resources. However, nothing is mentioned as to the commercial appropriation of such resources and some States, such as the United States, Luxembourg, the United Arab Emirates (11) chose to grant rights to space resources to their nationals while there is no consensus at the international level on this issue (12). One of the main obstacles to a consensus is that, besides the non-appropriation principle, there is no other space property rights regime in place, nor are there any definitions related to property law which would be useful in that sense. For instance, there is no definition of a “celestial body”, of “movable” or “immovable” goods in space, nor is there any universally adopted legal definition of a “space object” or “space resources” (13). Most interestingly, as the legal debate continues on the legal void at the international level, and while “fragmented” national law creates a heterogenous puzzle of legal loopholes (e.g., assignment, attribution or jurisdiction matters, etc.), the private sector moves fast enough to seize the opportunity to create “customary” practice and make its own rules (14). This phenomenon can be described as the rise of the “lex mercatoria spatialis” (15) (or commercial space law), which, contrary to the corpus juris spatialis, evolves rather quickly in a “stealthy” fashion and is more elusive given that commercial law is not international, but transnational (16). Transnational law is more flexible and multifaceted, it is therefore harder to grasp. For example, with regards to property rights, what makes its international harmonization inherently trickier is that property law is linked to a national jurisdiction. However, as soon as some property rights are transformed into financial assets, they escape a given jurisdiction and fall under transnational law (17). For this reason, this note addresses property rights in further sections, more precisely through the prism of space resources, finance, and intellectual property rights, while ensuring that, for the benefit of a sustainable space ecosystem, monopolies will be limited to the greatest extent possible. In particular, anti-monopoly law is studied at two levels: the what and the how. The what consists in the value proposition of ethical space commerce, compliant with fair competition principles, and the how consists in the means to ensure that those means do not monopolize the final frontier.

Problem

This changing context raises the question of whether public international space law is well equipped to face the rampant transnational lex mercatoria spatialis dynamic, or whether new cross-national actors are playing an increasing role in private international law, and in the privatization of law itself, with regards to the development of the future space ecosystem. This begs the question as to the means of ensuring the (perennial) protection of the higher principles and ethics of international space law despite the sector’s privatization.‍

Potential Solutions

There are multiple potential legal solutions at the international level, such as amending the OST. However, interestingly, the private sector is not that keen on changing the OST (18). Moreover, reaching global consensus has proved increasingly more challenging (19) given the growing number of space faring nations or nations with space capabilities (20), non-traditional space actors (21), the democratization of the space sector (22), and the fragmentation of space law (23). Therefore, for efficient and pragmatic reasons, a solution at the global governance level, such as the United Nations (24), is not necessarily ideal for the near future (25), nor for the commercial sector which prefers to “pick and choose” among the most advantageous jurisdictions following their interests, to the detriment of globalized legal stability (26). Moreover, it is asserted that new elements of the body of law are created behind closed doors, privately, by lawyers and arbitrators, and not publicly, by judges (27). Notably, since the private sector appears lately to be one step ahead of regulators in the emerging space commerce (28), it would make sense to look at adopting strategies that resonate with the commercial sector to anticipate the next moves while not just regulating for the sake of it (29). Instead, to secure the perennialism of the higher principles of space law, it would be beneficial to create legal (either hard or soft law) “beacons” as catalysts for future ethical compliance, in terms of requirements, incentives and sanctions, and thus help channel the market forces into a sustainable direction in the interest of intergenerational benefit sharing (30). Legal design (31), as elaborated in the discussion section, infra, comes in as a useful tool to mind map a constellation of legal loopholes and contention points to be “transformed” and “activated” into such ethical compliance beacons (32) by co-design at a later stage. Such a visual tool can indeed contribute to determining better strategies and roadmaps down the road.

Analysis of the What: Antitrust and the OST Principles

One such strategy could stem from the realm of national law, even though it can trigger international implications and consequences. In this case, it is not about national space legislation, but about competition law, or what is also called antitrust. The only reason why antitrust is considered at his stage, is that antitrust stems from the national level and that there is no such thing, to this day, as a harmonized international antitrust regime per se besides a fragile international governance consisting of non-binding guidelines (33) and failed dialogue at the level of the World Trade Organization (WTO) (34). Antitrust is indeed very much politicized (35) and arbitrary, judged on a case-by-case basis, and at the service of “national champions” (36). However, despite these hurdles, several arguments can be made in favor of antitrust mechanisms applied to the commercial space sector for the benefit of protecting the aforementioned principles to prevent a zero-sum dynamic (37).

Benefit Sharing

Firstly, fair competition entails preventing further consolidation of a market and breaking up monopolies which absorb most benefits in one place (38). In the space sector, the 1966 Declaration on Space Benefits (39) and the OST emphasize the need for space activities to be “carried out for the benefit” of humankind. Indeed, article I of the OST, provides that:

“The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind (...)” (emphasis added)

However, it is not clear how space activities are exactly to be carried out for the benefit of all. The notion of “sharing” benefits derived from space activities appears in the Moon Agreement of 1979 but the agreement itself has not succeeded in being adopted by a significant number of nations and its fate remains uncertain (40). However, the notion of benefit “sharing” has resurfaced through international working groups such as the Hague International Space Resources Governance Working Group (HIRSGWG) and debated by scholars at Outer Space Institute (OSI) in terms of what benefit sharing should entail (41). What is clear, though, is that more work must be done to determine what the notion of benefits entails, and an antitrust perspective might be helpful in terms of promoting fair competition while restricting unchecked consolidation. More work must also determine whether equality or equity (or both, and if so, to what extent) should prevail.

Equality and Free Access

Secondly, it could be argued that the principle of “equality” and “free access” as enshrined within article I of the OST would seem to preclude monopolies insofar as equal access to celestial bodies must be maintained while, in theory, monopolization would potentially bar such equal access:

(...) Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies (...) (42). (emphasis added)

The main concern raised by the above-cited paragraph is to determine to what extent the article I applies to space resources on the celestial bodies in question. Since celestial bodies are not defined, as previously stated, and since there is no mention of space “resources” within the OST, national law or doctrine can be used to answer the question. The only national legislations mentioning space resources are the ones in favor of the commercialization, as listed supra (43). Secondary sources, or doctrine, reflect divergent views expressed by scholars at the international level (44). This situation illustrates how national law is filling the legal void previously referred to. Nevertheless, which void does it precisely try to fill? The term “appropriation” appears in article II of the OST, alongside with the term “celestial body” which, in article I appears next to “free access”, “equality” and “benefit”. By association, it can be inferred that the States in favor of space commerce do not object to the idea of the extension of these principles to space resources. In this case, as space resources regulation seems to emanate from the national level, national antitrust measures constitute, (at the first stage) an adequate legal response, in parallel, to contain and monitor the risk of monopolization or other anti-competitive behavior in space (an international level field). Such measures could indeed be included within current and future national space legislation and enforce fair competition based on the OST principles. This could in turn generate enough momentum and critical mass to trigger an international framework and intensify harmonization efforts (at the second stage), especially with regards to the commercialization of the space sector.

Cooperation and Due Regard

Thirdly, article IX of the OST provides that principles such as “cooperation” and “due regard” must be complied with:

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty (45) (emphasis added)

These obligations, under international law, bind States directly and non-governmental entities, indirectly, because of article VI which extends the State’s responsibility to the activities of their respective nationals. However, as “due regard” may be interpreted as mandatory because of the wording “shall conduct” which precedes it, the same rationale might not necessarily cover cooperation because the wording “shall be guided” might rather lead towards the realm of guidelines. Monopolization tends to preclude cooperation, but it is harder to draw the line between what might consist of cooperation (46) vs collusion (47). “Cooperation” in this case represents an interesting “beacon” because if not carefully delimited, it might lead to a legal void and be used to justify some form of collusion in the future. Therefore, this is a useful example to bring forth ethics and values in the light of the OST principles towards “guiding” interpretation of “cooperation” in compliance with fair competition requirements. Mandatory “due regard” is a key argument backing fair competition due to its definition: “to give a fair consideration to and give sufficient attention to all of the facts” (48). In article IX, “due regard” extends to the interests of “all” other States Parties to the OST, which means that all these interests should be taken into “fair consideration” before conducting activities in outer space. It is difficult to imagine how a monopolistic environment, or any other anti-competitive behavior would come to terms with this norm.

## 1AC---Framing

#### The standard is maximizing expected wellbeing---act hedonistic util

#### 1] Reducing existential risks is the top priority in any coherent moral theory

Pummer 15, [Theron, Philosophy @St. Andrews <http://blog.practicalethics.ox.ac.uk/2015/05/moral-agreement-on-saving-the-world/>] Sachin

There appears to be lot of disagreement in moral philosophy. Whether these many apparent disagreements are deep and irresolvable, I believe there is at least one thing it is reasonable to agree on right now, whatever general moral view we adopt: that it is very important to reduce the risk that all intelligent beings on this planet are eliminated by an enormous catastrophe, such as a nuclear war. How we might in fact try to reduce such existential risks is discussed elsewhere. My claim here is only that we – whether we’re consequentialists, deontologists, or virtue ethicists – should all agree that we should try to save the world. According to consequentialism, we should maximize the good, where this is taken to be the goodness, from an impartial perspective, of outcomes. Clearly one thing that makes an outcome good is that the people in it are doing well. There is little disagreement here. If the happiness or well-being of possible future people is just as important as that of people who already exist, and if they would have good lives, it is not hard to see how reducing existential risk is easily the most important thing in the whole world. This is for the familiar reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. There are so many possible future people that reducing existential risk is arguably the most important thing in the world, even if the well-being of these possible people were given only 0.001% as much weight as that of existing people. Even on a wholly person-affecting view – according to which there’s nothing (apart from effects on existing people) to be said in favor of creating happy people – the case for reducing existential risk is very strong. As noted in this seminal paper, this case is strengthened by the fact that there’s a good chance that many existing people will, with the aid of life-extension technology, live very long and very high quality lives. You might think what I have just argued applies to consequentialists only. There is a tendency to assume that, if an argument appeals to consequentialist considerations (the goodness of outcomes), it is irrelevant to non-consequentialists. But that is a huge mistake. Non-consequentialism is the view that there’s more that determines rightness than the goodness of consequences or outcomes; it is not the view that the latter don’t matter. Even John Rawls wrote, “All ethical doctrines worth our attention take consequences into account in judging rightness. One which did not would simply be irrational, crazy.” Minimally plausible versions of deontology and virtue ethics must be concerned in part with promoting the good, from an impartial point of view. They’d thus imply very strong reasons to reduce existential risk, at least when this doesn’t significantly involve doing harm to others or damaging one’s character. What’s even more surprising, perhaps, is that even if our own good (or that of those near and dear to us) has much greater weight than goodness from the impartial “point of view of the universe,” indeed even if the latter is entirely morally irrelevant, we may nonetheless have very strong reasons to reduce existential risk. Even egoism, the view that each agent should maximize her own good, might imply strong reasons to reduce existential risk. It will depend, among other things, on what one’s own good consists in. If well-being consisted in pleasure only, it is somewhat harder to argue that egoism would imply strong reasons to reduce existential risk – perhaps we could argue that one would maximize her expected hedonic well-being by funding life extension technology or by having herself cryogenically frozen at the time of her bodily death as well as giving money to reduce existential risk (so that there is a world for her to live in!). I am not sure, however, how strong the reasons to do this would be. But views which imply that, if I don’t care about other people, I have no or very little reason to help them are not even minimally plausible views (in addition to hedonistic egoism, I here have in mind views that imply that one has no reason to perform an act unless one actually desires to do that act). To be minimally plausible, egoism will need to be paired with a more sophisticated account of well-being. To see this, it is enough to consider, as Plato did, the possibility of a ring of invisibility – suppose that, while wearing it, Ayn could derive some pleasure by helping the poor, but instead could derive just a bit more by severely harming them. Hedonistic egoism would absurdly imply she should do the latter. To avoid this implication, egoists would need to build something like the meaningfulness of a life into well-being, in some robust way, where this would to a significant extent be a function of other-regarding concerns (see chapter 12 of this classic intro to ethics). But once these elements are included, we can (roughly, as above) argue that this sort of egoism will imply strong reasons to reduce existential risk. Add to all of this Samuel Scheffler’s recent intriguing arguments (quick podcast version available here) that most of what makes our lives go well would be undermined if there were no future generations of intelligent persons. On his view, my life would contain vastly less well-being if (say) a year after my death the world came to an end. So obviously if Scheffler were right I’d have very strong reason to reduce existential risk. We should also take into account moral uncertainty. What is it reasonable for one to do, when one is uncertain not (only) about the empirical facts, but also about the moral facts? I’ve just argued that there’s agreement among minimally plausible ethical views that we have strong reason to reduce existential risk – not only consequentialists, but also deontologists, virtue ethicists, and sophisticated egoists should agree. But even those (hedonistic egoists) who disagree should have a significant level of confidence that they are mistaken, and that one of the above views is correct. Even if they were 90% sure that their view is the correct one (and 10% sure that one of these other ones is correct), they would have pretty strong reason, from the standpoint of moral uncertainty, to reduce existential risk. Perhaps most disturbingly still, even if we are only 1% sure that the well-being of possible future people matters, it is at least arguable that, from the standpoint of moral uncertainty, reducing existential risk is the most important thing in the world. Again, this is largely for the reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. (For more on this and other related issues, see this excellent dissertation). Of course, it is uncertain whether these untold trillions would, in general, have good lives. It’s possible they’ll be miserable. It is enough for my claim that there is moral agreement in the relevant sense if, at least given certain empirical claims about what future lives would most likely be like, all minimally plausible moral views would converge on the conclusion that we should try to save the world. While there are some non-crazy views that place significantly greater moral weight on avoiding suffering than on promoting happiness, for reasons others have offered (and for independent reasons I won’t get into here unless requested to), they nonetheless seem to be fairly implausible views. And even if things did not go well for our ancestors, I am optimistic that they will overall go fantastically well for our descendants, if we allow them to. I suspect that most of us alive today – at least those of us not suffering from extreme illness or poverty – have lives that are well worth living, and that things will continue to improve. Derek Parfit, whose work has emphasized future generations as well as agreement in ethics, described our situation clearly and accurately: “We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy…. Our descendants might, I believe, make the further future very good. But that good future may also depend in part on us. If our selfish recklessness ends human history, we would be acting very wrongly.” (From chapter 36 of On What Matters)

#### 2] Theory---determines validity of ground. Its DTA.

#### ---A] Topic lit – the lit is where we do our research and most articles are written using the lens of util

#### ---B] Ground – most frameworks divisively lean one way or another, util is the best in allowing arguments on both sides i.e. we get the debris aff, they get the mining da.

## 1AC---Underview

#### 1] 1AR Theory –

[0:17]

#### ---A] the aff gets it because otherwise the 1NC could be infinitely abusive which o/w,

#### ---B] it’s drop the debater because the 2AR is too short to win a shell AND substance so theory can only check abuse for the aff

#### ---C] no neg RVI because otherwise they could dump on the shell for 6 minutes and get away with anything by sheer brute force,

#### ---D] fairness is a voter and outweighs---necessary for competitive activities---every argument relies on the judge evaluating them fairly---comes before substance, it determines whether it’s an accurate measure of who debate better.

#### 2] Reasonability on T – Use a brightline of disclosure and link or impact turn ground. Brightline resolves arbitrariness –

[0:14]

#### ---A] Reciprocity – the neg gets exclusive access to topicality so its irreciprocal to hold it to the same standard as other theory,

#### ---B] Bidirectionality – means they get topicality either way – choosing the best interpretation is a bad standard,

#### ---C] Engagement – reasonability encourages a refocus on substantive education – the brightline proves they had the ability to engage.

#### 3] Condo is a voting issue – the time crunched 1AR can’t read its best offense against multiple worlds with different uniqueness conditions – they collapse to what’s undercovered which wrecks engagement.

## 1AC---Extra

### \*\*\*IF TIME\*\*\*

#### Debris creates existential nuclear retaliation.

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

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