## 1

#### Interpretation – the affirmative must defend the appropriation of outer space is unjust. To clarify – that means celestial bodies.

#### The OST proves there is a distinction between outer space which explicitly refers to celestial bodies and equipment

1AC Hertzfelld and Pace 13 Hertzfeld, Henry (professor Space Policy Institute, Elliott School of International Affairs, The George Washington University), and Scott N. Pace. "International cooperation on human lunar heritage." Science 342.6162 (2013): 1049-1050.

Although ownership of planets, the Moon, and celestial bodies is prohibited, ownership of equipment launched into space remains with the nation or entity that launched the equipment, wherever that equipment is in the solar system. Under the OST, that nation is both responsible and liable for any harmful acts that equipment may create in space. There are no prescribed limits on time or the amount of damage a nation may have to pay.

#### Violation – appropriation of celestial bodies excludes usage of equipment, stations, facilities, etc.

UNOOSA [United Nations Office for Outer Space Affair. “2222 (XXI). Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.” <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html>] Justin

ARTICLE II

Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

ARTICLE III

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding.

ARTICLE IV

States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.

ARTICLE V States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of their space vehicle. In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties. States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the moon and other celestial bodies, which could constitute a danger to the life or health of astronauts. ARTICLE VI States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization. ARTICLE VII Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air or in outer space, including the moon and other celestial bodies. ARTICLE VIII A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return. ARTICLE IX 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 co-operation 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. States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the moon and other celestial bodies, may request consultation concerning the activity or experiment. ARTICLE X In order to promote international co-operation in the exploration and use of outer space, including the moon and other celestial bodies, in conformity with the purposes of this Treaty, the States Parties to the Treaty shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States. The nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned. ARTICLE XI In order to promote international co-operation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in outer space, including the moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively.

ARTICLE XII

All stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

#### 1] precision – the counter-interp justifies them arbitrarily doing away with random words in the resolution which decks negative ground and preparation because the aff is no longer bounded by the resolution. Independent voter for jurisdiction – the judge doesn’t have the jurisdiction to vote aff if there wasn’t a legitimate aff.

#### 2] Limits – allowing equipment to equate to appropriation of celestial bodies explodes limits by shifting the debate to an infinite amount of equipment like telescopes or rovers that companies could place on the moon – leads to unbeatable and an infinite permutation of affs that just ban one type of equipment which the neg can’t ever predict.

#### 3] TVA – just defend sovereign claims of the moon are bad.

#### 5] Paradigm Issues –

#### a] Topicality is Drop the Debater – it’s a fundamental baseline for debate-ability.

#### b] Use Competing Interps – 1] Topicality is a yes/no question, you can’t be reasonably topical and 2] Reasonability invites arbitrary judge intervention and a race to the bottom of questionable argumentation.

#### c] No RVI’s - 1] Forces the 1NC to go all-in on Theory which kills substance education, 2] Encourages Baiting since the 1AC will purposely be abusive, and 3] Illogical – you shouldn’t win for not being abusive.

## 2

#### Key to commercial space industry expansion

Alex Gilbert 19, Non-Resident Fellow at the Payne Institute for Public Policy at the Colorado School of Mines, with; Morgan D. Bazilian, Professor of Public Policy and Executive Director of the Payne Institute at the Colorado School of Mines; 4/19/19, “We Need a Space Resources Institute,” https://blogs.scientificamerican.com/observations/we-need-a-space-resources-institute/

Fifty years ago this July, Apollo 11 delivered the first crewed mission to the surface of the moon. Today, the United States is on the verge of a space renaissance—returning astronauts to the moon, first on an orbiting space station and then a return to the surface. Among other objectives, NASA, its international partners and commercial companies are looking to find and mine lunar water­—the basic building block of hydrogen fuel and oxygen.

Water, or ice, located on a celestial body like the moon or an asteroid, is a type of space resource. In the last 20 years, deep space exploration has identified potential water deposits on the moon, on Mars, in the asteroid belt and even on moons orbiting Jupiter and Saturn.

Using in-situ resource utilization (ISRU) technology, such deposits could be converted to hydrogen or oxygen, enabling the refueling and supply of future space missions. In the long term, these space resources can also reduce the cost of uncrewed exploration missions to deep-space locations such as the asteroid belt, the giant planets and the Kuiper Belt.

Commercial interests are also interested in mining space resources. If water can provide (relatively) cheap refueling services in space, it could catalyze the growth of the commercial space industry. As an example, there is already interest in asteroid mining, in search of platinum or other valuable metals. The global space industry is estimated to be worth more than $400 billion in 2018. By 2030, the industry could double in size because of new technologies and commercial innovation, including space resources. The U.S. is well-situated to capture a significant share of that growth, but that is far from assured. A further focus on scientific research is needed.

#### Commercial space innovation stops extinction

Charles Beames 18, Chairman of the SmallSat Alliance, Executive Chairman of York Space Systems, former Principal Director of Space and Intelligence in the Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics (OUSD(AT&L)), Col. (ret.) in the USAF where he served 23 years in space & intelligence leadership positions around the world, 8/8/18, “Op-ed | SmallSat Alliance is on a path toward a new space horizon,” https://spacenews.com/op-ed-smallsat-alliance-is-on-a-path-toward-a-new-space-horizon/

We find ourselves still at the dawn of a new space century, mindful of the victories and setbacks of our past, eager to pass the torch to the next generation of space visionaries, scientists, engineers, and enthusiasts. We look to the future not just to see how much bigger, faster, or higher we can reach, but also how the United States, and specifically the U.S. space community, can again inspire the nations of the world to align with us, as it did in the 20th century.

The SmallSat Alliance is an alliance of companies developing, producing, and operating in all segments of the ‘next generation’ space economy; championing renewed U.S. leadership in the burgeoning commercial space economy, and advocating for the transformation of government-led space capabilities. We are experienced space professionals who have chosen to join with others leveraging our decades of hard-won experience, to develop smarter ways to explore space in the 21st century.

A wonderful outgrowth of the legacy space program is the commercial, entrepreneurial, and job-creating commercial space business that it bequeathed. These next-generation enterprises range from multi-million-dollar startups providing rideshare opportunities or components for small satellites to multi-billion-dollar space data-analytic platforms reinventing urban car service and agricultural production. The early returns of this economic revolution are already on our doorstep: space data capabilities are exponentially growing elements of the 21st century world economy.

Beginning with the dreams and funding by successful tech entrepreneurs, enormous venture investments are already delivering wondrous benefits to the world.

Commercial Space – Profit and Non-Profit

There are really two major categories in the commercial sector, the profit driven and the non-profit. The classic for-profit companies include not only those designing, building, launching, and operating satellites but also the tech sector that is turning that raw space data into gold through machine-learning analytics. Since for-profit companies are no longer dependent upon the revenues generated by the Cold War space race culture of a bygone era, this new generation of space companies is able to more efficiently capitalize on Moore’s Law, the nonstop exponential growth in chip density, and the associated networking technology co-evolving with it. This new generation is building profitable businesses helping to clean up our oceans of garbage and debris with satellite surveillance, reconnoitering to assist in enforcing laws that protect our oceans from illegal, unregulated, unlicensed fishing, something that is rapidly depleting the world’s most valuable and essential lifeforms. It’s leading in the innovative use of low-cost satellite constellations to produce ubiquitous remote-sensing data, enabling small business owners to be more profitable and less wasteful. For example, precise timing signals from space are already optimizing transportation of people, goods, and services, with even further gains anticipated with the introduction of artificial intelligence to assist drivers, perhaps even someday replacing them entirely.

The non-profit sector is the other side of commercial space, concerned more for the general welfare of society, but every bit as integral to this new space enterprise. Much like every century before it in human history, ours is not without its unique challenges, some of which have been a consequence of the last, and all of which the space data domain can be leveraged to help solve. Examples are endless, but one challenge that this new space community is uniquely well-adapted for is to further inform worldwide resource allocation for the 21st century and beyond. These two primary resources are sustainable water and the materials needed for adequate housing for an ever-increasing human population. As cities and urbanization continue to expand, governmental planning challenges such as transportation design optimization for goods and services are only the beginning. Additionally, through using inexpensive remote sensing technologies, some members are designing space data analytics to mitigate human suffering from plagues, contain outbreaks, and combating illegal poaching. Some are connecting with other non-profits to curtail human trafficking for the sex trade or forced labor for migrant debt repayment. Still others are helping non-governmental organizations in their work to expose the use of children as soldiers. Addressing these challenges has little to do with resuscitating dreams conceived by long deceased science-fiction writers and much more to do with turning “swords back into plowshares” to solve real threats to humanity.

Other non-profit initiatives include pursuing an even more foundational understanding of who we are and how to be the best custodians of our environment. Much as exploring and monitoring the world’s oceans has advanced civilization through a better understanding of human life and the planet, so too does exploring and monitoring from space. Low Earth orbit (LEO) provides a unique vantage point to look back on the planet and understand what is happening, anticipate what might happen and prepare for the future. In addition to better understanding Earth, responsible and rapid exploitation of the low Earth orbit domain will enhance the understanding of the solar system and the rest of the universe. Small satellites already offer low-cost platforms to study and explore what lies beyond the Earth. Other members are pioneering the use of zero-carbon, hydrogen-based reusable propulsion systems to ensure we don’t worsen our atmosphere using kerosene-fueled rockets for the coming tsunami of satellite launches. Finally, a mission ensuring the general welfare and planet survival for the next thousand years is finally confronting the existential threat that asteroids and comets pose to humanity. These extra-terrestrial, deep-space threats are passing dangerously close to our planet, and today we have no solar map of them and no defense.

#### Lunar mining facilitates low-cost commercial spaceflight

Paul Spudis 17, former senior staff scientist at the Lunar and Planetary Institute in Houston, Texas, 12/14/17, “Why We Need Humans—Not Just Robots—On the Moon,” https://www.airspacemag.com/daily-planet/why-we-need-humansnot-just-robots-moon-180967547/

I have detailed in many previous posts the Moon’s richness as a source of materials and energy in space. This is (or should be) a primary motivator for human return to the Moon—to use its resources to create new spaceflight capabilities and for life support. While human space travel will never be dirt cheap, we can use cheap dirt on the Moon to lower its costs dramatically. A fueled rocket is more than 90 percent propellant by weight—why not get that propellant from a source already in orbit around Earth? Certainly, many have their eyes set on places beyond the Moon; so learning how to access and use resources on the Moon is beneficial to their getting where they want to go, and vital to remaining there.

People have a value in space beyond the calculus of dollars per kilogram or gigabits per second. We’re told about the accomplishments of the Mars Exploration Rovers, yet, for all the data they’ve collected, we still cannot draw a simple geologic cross-section of their landing sites, and we still do not know the origin of many of the rocks at the site (igneous or sedimentary). A human geologist would have obtained this information after a few hours of fieldwork. People require abundant mass and power, but people give a big return on that investment.

#### Commercial space solves disease

Dirk C. Gibson 12, Associate Professor at the University of New Mexico, Commercial Space Tourism: Impediments to Industrial Development and Strategic Communication Solutions, Bentham Books, Google Books

4. COMMERCIAL SPACE BENEFITS

Four factors might justify commercial space development: I) Manufacturing benefits, 2) Mining opportunities, 3) Medical breakthroughs and 4) Astronomy advancements. Each will be described in detail.

A. Manufacturing Benefits "The future also promises more commercial benefits. Much has been said about the potential for creating and manufacturing new materials in the microgravity environment of space," declared Edward L. Hudgins [10]. Taylor noted that "Certain manufacturing processes can be done better in the absence of gravitational fields, or in a vacuum which space offers" [23]. We will consider: I) General manufacturing, 2) Biotechnology and 3) Pharmaceutical production.

General Manufacturing The microgravity environment of space appeals to manufacturers for a variety of reasons. According to Taylor, "Materials that will not mix on earth—oil and water, certain minerals—will mix in space. This space manufacturing could lead to the production of vastly improved products, more precise manufacturing of products, and new materials-processing techniques" [23]. O'Neill referred to "the advantages of zero gravity for the handling of massive objects, for the heating of materials to very high temperatures without the contamination of containing crucible walls, for the formation of uniform production of light and heavy materials" [24].

Biotechnology Biotechnology and medical research and development in particular would benefit from space manufacturing. A study for the Office of Space Commercialization in the Department of Commerce found that "The microgravity conditions of space enable the growth of large, superior quality crystals that could be the predecessors to synthesized proteins for fighting disease. Materials have been developed without the structural flaws that often accompany their production on Earth" [3J.

Pharmaceutical Production

Medicines may be improved substantially by research and production conducted in space. It is believed that the environmental characteristics of space would

enhance pharmaceutical company operations. One study specified that because of space-based electrophesis, "New vaccines and drugs can be produced in volumes that could aid millions of people" [23]. Existing drugs could be improved and made more cheaply, including diabetes and hormone deficiency drugs, and antihemophiliac products, epidermal growth stimulants, antitrypsin products and interferon [23].

#### Extinction

Yaneer Bar-Yam 16, 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.

## 3

#### Strong sanctions crush private companies in Russia now – international unity key

Pettypiece 3/24 - senior White House reporter for NBCNews.com [Shannon, “U.S. announces new Russian sanctions, plans to admit thousands of Ukrainian refugees,” NBC News, 3/4/2022, https://www.nbcnews.com/news/biden-high-stakes-meetings-push-allies-ramp-pressure-russia-rcna21201]

BRUSSELS — The United States announced a package of new sanctions against Russia and further aid for Ukrainian refugees as President Joe Biden looked to rally the leaders of some of the world’s most powerful democracies to increase their efforts to help Ukraine in a series of high-stakes meetings.

The U.S. said it would place additional sanctions on more than 400 Russians and Russian entities, including the Duma and more than 300 of its members, along with more than 40 defense companies, a senior administration official said. It plans to take additional steps to prevent Russia from attempting to prop up its economy.

The White House also announced it would allow as many as 100,000 Ukrainians to enter the U.S., with a focus on those who are most vulnerable. The administration is also prepared to offer more than $1 billion in additional funding toward humanitarian assistance and $11 billion over the next five years to address worldwide food security threats after the disruptions to the Russian and the Ukrainian agricultural industries.

The additional efforts come as senior administration officials say Biden, who attn a series of summits Thursday, is trying to raise pressure on other nations to increase their support to Ukraine, while he himself has been under pressure at home to do more.

#### They explicitly target the aerospace industry – the plan would either repeal or it directly violates

Tarantola 3/2 – has covered topics from military hardware and cutting-edge medical devices to cannabis accoutrements and home cooking gadgets since getting his tech journalism start in 2011. His current beats focus on EVs, spaceships, robots, and HALs (Artificial Intelligences and Machine Learning systems), as well as the weekly Hitting the Books column [Andrew, “What economic sanctions mean for Russia's space program,” 3/2/2022, https://www.engadget.com/what-economic-sanctions-mean-for-russias-space-program-170003960.html]

Following Russia’s unprovoked invasion of Ukraine last week, the West has united over its condemnation of the aggression and has enacted broad economic sanctions against the nation. A financial fallout is already occurring with the ruble losing 20 percent of its value against the dollar nearly overnight, and which could fall even further as sanctions progressively excise Russia from the international monetary system. The pecuniary shockwaves created by these sanctions are likely to impact every strata of Russian society with far reaching consequences for the Roscosmos space program and the continued safe operation of the International Space Station.

These “strong sanctions,” US President Joe Biden stated at a press conference last Thursday, will impose “severe costs on the Russian economy” in an effort to “strike a blow to their ability to continue to modernize their military. It’ll degrade their aerospace industry, including their space program.”

Economic sanctions are an ancient form of interstate arm twisting and have been used extensively throughout the 20th century by nations in effort to elicit specific behaviors from their neighbors. What sets this round apart is its breadth, which targets some 600 billion dollars worth of Russian assets. Russia has been cut off from the SWIFT international payment system and its central banks’ assets have been frozen in the US, EU, and UK — as have those of Putin’s upper echelon. Airports and seaports across the West are now closed to Russian commercial travel while imports of Korean “strategic items” as well as American computers, semiconductors, lasers, navigation and avionics — all vital components to Russia’s space program — have been banned.

#### Private entity follow on is key to durable sanctions and containment – aff is appeasement

Sanger 3/17 – Associate Professor of International Law at the University of Cambridge, and a Fellow of the Lauterpacht Centre for International Law and of Corpus Christi College [Andrew, “Piercing the State’s Corporate Veil: Using Private Actors to Enforce International Norms,” Blog of European Journal of International Law, 3/17/2022, <https://www.ejiltalk.org/piercing-the-states-corporate-veil-using-private-actors-to-enforce-international-norms/>]

Russia’s invasion of Ukraine is a tragedy of statehood: a state no longer recognises its neighbour’s right to exist. Yet, the wider resistance to this invasion has highlighted the role of private individuals and corporations in enforcing fundamental international law norms. The involvement of the private sector has helped to globalise the conflict. Individuals and companies have come to be treated as, and to portray themselves as, global political actors in their own right, and not merely as subjects of international law.

This piercing of the state’s corporate veil can be seen in several ways. Ukrainian and Western governments have explicitly called on global companies to help uphold international norms, with companies responding directly. Some global corporations are going beyond state requirements to disengage from Russia in a way that is arguably tantamount to imposing their own sanctions, sometimes using international norms when justifying their action. Some states have imposed sanctions on private Russian ‘oligarchs’ because they have interpersonal connections with Putin in hope that this will influence his decision-making – i.e. going beyond just holding them accountable in their own right. In their justification for sanctions, these states have also recognised that private citizens have helped undermine and/or threaten Ukraine’s sovereignty and territorial integrity, showing a willingness to recognise that private action influences the state regime.

Leveraging the power of global private corporations to pressure Russia into ending its violations of international norms

The response to Russia’s aggression shows the role played by global corporations in helping to uphold fundamental international norms, including the prohibition of unlawful force and the right of territorial integrity. From Apple to Ikea to General Motors, numerous companies have disengaged from Russia. Sometimes this is to comply or align with sanctions and trade restrictions imposed by home states, but governments have also sought to leverage the private sector—individuals and corporations—to put pressure on Russia to end its aggression.

For example, Ukrainian officials have called on global companies for assistance: ‘During a call with almost 300 US lawmakers, Ukrainian president Volodymyr Zelensky had asked for Visa and Mastercard privileges to be cut off for the Russian people’ (the companies have now suspended operations in Russia). Digital Minister Mykhailo Fedorov urged major tech companies to support Ukraine and boycott Russia. He posted the letters—and some replies—on his Twitter feed so that ‘the world can see’. PayPal’s announcement that it was suspending services in Russia ‘appeared on Fedorov’s Twitter feed before it was reported in the media. So too did news that Samsung and Nvidia are stopping all business with Russia, something he publicly called for on his social feeds.’ Within 48 hours of calling out Elon Musk, the billionaire ‘had adjusted his constellation of Starlink satellites and sent a lorry-load of internet-ready terminals to Ukraine’. In the wake of the news that Shell was continuing to buy Oil from Russia, Ukrainian Foreign Minister Dmytro Kuleba called ‘on all conscious people around the globe to demand multinational companies to cut all business ties with Russia’. Days later, Shell apologised and announced that it is pulling out of the Russian oil and gas market.

These examples show how the state’s veil is being pierced to respond to Russia’s aggression: a state official (Ukrainian) calls on (global) corporations and individuals to put pressure on corporations to put economic pressure on the state (Russia) breaching international norms. Ukrainian officials thus see individuals as a means of leveraging the power of private and political actors (and this is made possible at scale by another private actor, the global digital platform), and see the active involvement of the private sector as a key strategy in responding to Russia’s aggression.

#### Russian appeasement causes Baltic state invasion

**France-Presse 22** – reporter for Inquirer (Agence, “Russia could attack Poland, Finland, Baltics—Polish PM,” *Inquirer*, 2-27-22, <https://newsinfo.inquirer.net/1560570/russia-could-attack-poland-finland-baltics-polish-pm>, Accessed 3-1-22, LASA-AH)

Poland’s prime minister said Saturday he feared a Russian attack on his country, Finland or the Baltic states and urged Europe to double defense spending after Moscow’s invasion of Ukraine. Putin will “**want to develop his aggressive policy, his invasion**”, Mateusz Morawiecki told French daily Ouest-France. “He started in Georgia, now Ukraine,” he added. “The next target could be the Baltic countries, Poland, Finland or other countries on the eastern flank.” Poland, a former Soviet satellite and now a member of the Nato alliance, shares a long border with Ukraine. As Russian President Vladimir Putin massed forces on his neighbor’s frontier before attacking on Thursday, Poland hosted more troops from the US-led military alliance. But he said Saturday: “We need a strong European army.” The continent must increase defense spending from around 300 billion euros to up to 600 billion euros per year, he argued. “It is not impossible and that will allow Europe to finally play a major role,” Morawiecki said in an interview also published by the German regional media group Funke Mediengruppe. “The era of peace and international order is coming to an end,” he added. “It is a test for the West and **the way we react to this test will determine our future, not for years but decades.”** Poland’s head of government proposed excluding defense spending from EU public finance rules to allow his country to spend three to four percent of its annual economic output on defense following Russia’s aggression. He also called for an “unprecedented and crushing” sanctions package on Moscow and for discussions to make Europe “independent” of Russian hydrocarbons. “By buying Russian oil and gas, **we are today financing Russia’s policy of aggression**,” he said.

#### Extinction – Baltics invasion triggers Article V and draws in every major power.

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The first scenario starts with a Russian land grab in the Baltics. To be very clear, this is an extreme scenario; an overwhelming majority of Western experts, including NATO staff, consider it to be a “remote” possibility.1 Nevertheless, there are good reasons to consider this extreme set of circumstances. First, it is a high-risk scenario, based on low probability but with high potential consequences. Second, many allies are worried about it. And third, this scenario might look less unlikely after the Russian use of force in Georgia and Ukraine. Stage One: The year 2018 sees the return of large-scale protests to major Russian cities. Suddenly, Vladimir Putin’s hold on power no longer seems a given. Only two weeks after the first protests, the Russian General Staff announces a large military exercise in Russia’s Western Military District, close to the border of Latvia. Implications: This combination of events would put NATO on notice about the internal developments in Russia and the announced military exercise, and these events would raise serious concerns that Russia’s leadership might be planning to create an international crisis to divert attention from a domestic crisis. At the same time, however, strong voices within NATO would almost certainly caution against overreacting to these events. They could argue that if NATO were to react militarily—by, for example, deciding to send temporary reinforcements, even perhaps only one additional battalion—to alleviate the concerns of Baltic nations, doing so would risk giving the Kremlin reason to up the ante. Indeed, deploying EFP forces in the region to the border area or even just raising their state of alert might be perceived by Russia as an aggressive move. Given these trade-offs, it is quite likely that NATO would react in a rather reserved way, which would give Russia an important advantage in terms of mobilizing its forces. Stage Two: Sudden protests by the Russian minority community in Latvia’s easternmost Latgale region spiral out of control with several fatalities. While NATO ambassadors are gathering for an emergency meeting, Putin warns NATO “not to interfere in the internal affairs of Latvia” and assures his domestic audience that “Russia will not idly stand by as Russians are being slaughtered abroad.” Implications: For the alliance, the sudden occurrence of serious protests in Latvia—whether or not instigated by Moscow—in conjunction with a domestic crisis in Russia and an arms buildup close to Latvia would immediately raise the severity of the crisis. The possibility of Russia escalating the conflict with NATO, which might have seemed rather low at Stage One, would suddenly become more realistic. (Indeed, similar Russian statements about the security of Russians living abroad were made ahead of Moscow’s interventions in Georgia and Ukraine.2) For the alliance, sudden protests in Latvia—in conjunction with a domestic crisis in Russia and an arms buildup close to Latvia— would immediately raise the severity of the crisis. That said, there would nonetheless still be a real possibility that allies would hold divergent interpretations of these events, and it is unclear whether the EFP would be ordered to immediately leave its base near Riga, at least to patrol the border with Russia.3 Even though NATO insists that the EFP has no role to play in a domestic unrest scenario, some allies might question that logic, given that events may be instigated by Russia as it looked to invade. Debates at NATO Headquarters on these issues could get acrimonious. Some allies would probably worry that such actions as well as NATO preparations to send additional forces to the region could be escalatory. The alliance could well look, and perhaps be, divided. Again, NATO might still wait to avoid giving Russia any pretext to intervene. Stage Three: Russian forces cross the border into Latvia and occupy the Latgale region. President Putin makes a press announcement that “Russia’s humanitarian intervention stops here and now.” NATO defense ministers meet and issue an ultimatum, demanding full Russian withdrawal. Implications: At this point, debates within NATO about the severity of the Russian threat would be overtaken by events. NATO would be presented with a military fait accompli. While this situation already would be very challenging to handle, it might be further complicated if Russian forces met only minimal resistance from Latvian forces and perhaps none at all from the EFP. (Given the distance between their base in Riga and the Latgale region, there would be a serious risk that they would not arrive quickly enough to resist Russian forces.) In this case, regional EFP commanders—who, in the case of Latvia, come from six different contributing nations—might be confronted with a choice between engaging immediately in a futile fight that they would be certain to lose or holding back to await further instructions from NATO Headquarters. Worse still, some commanders might even receive orders from their own national commands, bypassing the NATO chain of command and possibly complicating a collective response. One potential outcome would be paralysis. Conversely, there would also be a real possibility that an EFP commander—having received divergent orders from NATO, the host nation (Latvia), and national lines of command—might decide to engage in combat before NATO’s political leaders have decided to invoke Article V. Regardless of exactly how the fight was playing out in the theater, the NAC would, at this stage, have to determine whether or not to invoke Article V and whether or not to go to war with Russia in an environment where the scope of the Russian campaign would still look rather limited (as no allied forces from France, Germany, the United Kingdom, or the United States would be involved yet). Even if Article V were triggered, certain allies might still advocate for a diplomatic solution. A possible compromise might see allies starting immediate preparations for military reinforcement in parallel with heightened crisis diplomacy. Stage Four: NATO is ready to deploy the Spearhead Force from Ramstein, Germany, and starts preparations for assembling the rest of the eNRF. Simultaneously, the United States starts flying in additional personnel and equipment to Western Europe and Poland. Putin claims that “NATO is provoking an unnecessary war.” In many European capitals tens of thousands take to the streets, urging Russia and NATO to “end the mutual violence.” Implications: NATO, having started its military preparations, would face another tough choice. While the Spearhead would be ready in less than a week, assembling the rest of the eNRF would take longer (in all likelihood, a couple of weeks). A decision would have to be made whether to deploy the Spearhead right away, and risk losing it almost immediately in the theater, or to wait for assembling the full manpower of the eNRF. If NATO were to wait, the louder the voices of opposition to any military response could grow. Indeed, large-scale protests in Western Europe, perhaps fueled by subversive Russian propaganda, would very likely further affect and complicate NATO’s political decisionmaking.4 In this situation, some allies might opt out of a military response, while others—the United Kingdom and the United States, most likely—could bypass NATO’s slow mobilization process and move forward with their own deployment plans. This contingency—in which some allies hesitate to engage and others push forward—could effectively paralyze the alliance as a collective decisionmaking entity. In any case, NATO might well have to deal, at some point, with further Russian efforts to escalate the conflict by targeting critical NATO transportation nodes with precision-guided conventional strikes so as to prevent or at least complicate NATO preparations for retaliation.5 From a Russian perspective, waiting for NATO to muster a force of perhaps 100,000 personnel—which is what would be required to be credible enough to fight a regional war with Russia with the aim of retaking and securing the Baltics or perhaps even extending combat operations into Russian territory—would hardly be an option.6 In any case, NATO might well have to deal, at some point, with further Russian efforts to escalate the conflict by targeting critical NATO transportation nodes. But even if Russia were to shy away from further escalation (it might, for example, decide against striking Western Europe because of the risk that doing so would unify the alliance), NATO’s next move—laying the groundwork for force deployment to the Baltics—would almost necessarily involve escalating the conflict horizontally into Russian territory. Because NATO has decided against pre-positioning heavy military equipment in the Baltics, allies would have to fly in personnel and equipment with large transportation aircraft, which would be easy targets for Russian air defense systems around the Baltic Rim. If NATO wanted to avoid losing much of its first reinforcement wave before it actually reached the ground, it would have to target Russian anti-access and area denial installations, effectively extending combat operations into Russian territory. Stage Five: NATO receives intelligence reports that Russia is readying some of its tactical nuclear weapons stored in western Russia. Putin warns that “the two sides are on the brink of a nuclear armageddon.” Implications: Assuming that NATO had decided on a concrete deployment plan by this point, NATO leaders would have to decide whether to move forward given the possibility of Russia escalating to actual nuclear use. That decision would almost certainly cause serious frictions within the alliance and could further delay a military response. If NATO leaders weathered those quarrels and pressed on, NATO might then immediately be confronted with a second serious dilemma, stemming from NATO’s long-standing internal disputes about its nuclear deterrent. Over the years, Russia might have arrived at the conclusion that NATO would not use nuclear weapons—even in response to Russian nuclear use—in a limited regional scenario. As a result, Moscow might feel tempted to escalate to nuclear use in the hope of stopping NATO in its tracks before it could deploy forces. In this case, all of NATO’s possible nuclear countermeasures—rhetorical nuclear threats; so-called slow nuclear signals in the form of readying NATO’s forward-deployed nuclear forces (which would take a few weeks); or so-called fast signals, such as U.S. B-52 deployments to Western Europe (which could be executed within hours)—could be misperceived in Moscow as mere bluffs. The interplay between Russia doubting NATO’s resolve and NATO having difficulties making its nuclear threats credible would create a number of pathways for escalation through misperception. One possibility would be NATO proceeding with its deployment preparations absent its own distinct response to Russia’s nuclear threats. In this event, Russia might escalate to nuclear use out of concern that a regional conventional war with NATO could result in a Russian defeat, and perhaps the loss of Kaliningrad or even other Russian territory. According to two Russian military experts, “Strategic deterrence with conventional weapons of a potential aggressor state (or coalition of states) from undertaking a large-scale or regional war is unlikely. It is possible only by the threat of preventive nuclear actions.”7 Stage Six: U.S. satellites detect a small-yield nuclear explosion over a remote area in the North Sea. Implications: At this point, NATO would face the dire situation of Russia having escalated to actual nuclear use in the form of a single demonstration strike over international waters. The Russian strike would most likely not eradicate the dilemmas NATO would be facing already at Stage Five, when Russia was only threatening nuclear use, but instead make those dilemmas more pressing. In concrete terms, NATO members would now have to decide whether to move forward with the alliance’s deployment plans, stop in its tracks (obviously intimidated by Russian nuclear use), or perhaps respond with nuclear use. The latter option—nuclear use by the allies—in particular would most likely be highly contested within NATO. Given that the Russian demonstration strike would not have been directed against NATO territory, the risk of further nuclear escalation if NATO were to reciprocate, rapidly mounting domestic pressures in Western Europe to “avoid a nuclear holocaust,” and NATO’s (though comparably slow) ability to muster a significant conventional force, the alliance’s members might decide against nuclear use. At the same time, that might only help to reinforce the Russian (mis)perception that NATO really tends to shy away from nuclear use in a crisis. NATO would therefore be hard-pressed to show serious nuclear signals below the level of actual use, such as U.S. B-52 deployments to Western Europe. In turn, Russia, having just escalated to nuclear use, would face a no less dire situation, given that Moscow might feel that it had played its final card in an escalatory game aimed at preventing NATO from deploying forces to the Baltics. If NATO were to continue with its mobilization and deployment plans, Russia would have little choice other than to escalate the conflict further into NATO territory—perhaps by aiming conventional strikes at NATO’s western transportation nodes or perhaps by conducting additional nuclear strikes—or back down. Either way, Moscow would have to fear that its escalation strategy would solidify NATO’s assertiveness rather than undermine its cohesion.

## Case

### 1NC – Top

#### Tons of tech solves moon dust – it’s a non-factor

Rabie 21 [Passant Rabie is a space writer at Inverse, where she guides readers through the mysteries of the local universe. She covers ongoing missions to distant planets and beyond, and breaks down recent discoveries in the world of astrophysics and the latest in ongoing space news. "NASA IS TRYING TO DEAL WITH ITS MOST ANNOYING PROBLEM ON THE MOON." https://www.inverse.com/science/nasa-moon-dust-problem]

HOW DO YOU DEAL WITH DUST ON THE MOON?

In 2019, NASA created the Lunar Surface Innovation Initiative (LSII) to come up with new technologies needed for future exploration of the Moon, with dust mitigation being one of the main priorities.

The initiative came up with active and passive mitigation technologies for different kinds of equipment like rovers, power systems, spacesuits, and other types of hardware that NASA would send to the Moon.

Sharon Miller, the dust shedding material program’s principal investigator at NASA Glenn, says the combination of the passive and active techniques will allow the dust to be removed from the surface area while reducing the amount of power needed to remove it.

“The equipment that we're using is a variety of things from the different NASA centers,” Miller tells Inverse.

Some of the ideas that are currently being developed include ion-beamed deposited coating or laser patterned surfaces.

The team has started developing these materials and testing them in the lab, experimenting with different textures and combinations. NASA is then planning on testing these experimental solutions on the surface of the Moon starting in 2023.

“The solutions that we're working on are ‘leave no damage behind’ type of solutions,” Montbach says. “These are things that will only affect the equipment and prevent the equipment from being damaged by the dust, but will not do anything specifically to change what is on the Moon.”

The solutions are not only for missions like Apollo, but are designed for a longer, more sustainable stay on the Moon as NASA plans on building a lunar base on the Moon.

“A lot of what has begun this interest in this need is to try and find solutions not only for shorter missions but potentially that would work for longer missions as well,” Montbach says.

#### No moon dust – electron showers

Tomaswick 20 [ANDY TOMASWICK, Universe Today. COO at Bionymer, a biotechnology firm. "Finally! A Solution to Deal With Sticky Lunar Dust." https://www.universetoday.com/147737/finally-a-solution-to-deal-with-sticky-lunar-dust/]

The kind of dust present on the moon is even more annoying than the grains that bothered Anakin Skywalker on Tatooine. It is constantly bathed in solar radiation, smells like spent gunpowder, and can cause allergic reactions, as it did in some of the Apollo astronauts. It’s also notoriously difficult to clean off of surfaces. Now a team of scientists at the University of Colorado at Boulder think they have a solution that would remove lunar dust without harming the material it’s attached to. And they would do this by using a tool that sounds like it’s straight out of Star Wars – an electron beam.

Electron beams aren’t actually as sci-fi as they sound. They have been well understood since the 1950s, and are widely used in semiconductor manufacturing processes. They consist of a device that shoots out a low-energy (ie safe) stream of negatively charged particles.

Lunar dust itself is also negatively charged, caused by the constant solar radiation it is subjected to. This is part of the reason it’s so hard to clean – the small electrostatic buildup caused by the radiation makes the dust extremely clingy. This is similar to how a feather can stick to your hand in winter via electrostatic attraction. Or a cat can be completely surrounded by styrofoam pellets.

What Benjamin Farr and his colleagues at CU Boulder’s Laboratory for Atmospheric and Space Physics, the University of Iowa, and JPL realized was that they could use an electron beam to negatively charge a base material. Negative charges repel each other, so any negatively charged lunar dust that is present on the material should slough itself off.

In order to test this theory the team were unfortunately not able to take a prototype to the moon. However, they did manage to get their hands on a substance called “lunar simulant”, which is commercially available from NASA, and is designed to be as close as possible to actual lunar dust.

The researchers sprinkled the dust over various surfaces that could potentially be part of a future lunar mission. They then put the dust-coated material in a vacuum chamber (which obviously wouldn’t be needed on the moon) and then pointed an electron beam at them. As predicted, the dust just fell off the material. The team was able to clean about 75-85% of a dusty surface with their electron beam.

That’s still a far cry from being perfect, but it’s a lot better than the manual hand scrubbing that is currently part of any future lunar astronaut’s cleaning repertoire. And the research team still isn’t done yet. There’s still a lot of research to go before even a prototype makes a trip on any lunar mission. However, Dr. Mihály Horányi, one of the co-authors envisions a future where astronauts can simply leave their space suits in a special room, and they can then be bathed in an electron shower that flushes all the dust right off of them. Who knows, maybe that technique would work on Jedi robes too.

#### Mining solves the case, it turns the dust into a base and extracts helium in the process – GG

Jamasmie 19 [Cecilia has covered mining for more than a decade. She is particularly interested in Corporate Social Responsibility (CSR), Diamonds and Latin America. Cecilia has been interviewed by BBC News and CBC among others and has been a guest speaker at mining conventions, including MINExpo 2016 and the World’s Copper Conference 2018. She is also member of the expert panel on Social License to Operate (SLO) at the European project MIREU (Mining and Metallurgic Regions EU). She holds a Master of Journalism from the University of British Columbia, and is based in Nova Scotia. "Mining the moon ready to lift off by 2025." https://www.mining.com/mining-moon-ready-lift-off-2025/]

European scientists have announced plans to start mining the moon as early as 2025, though what they’ll be extracting is neither gold nor diamonds, but waste-free nuclear energy thought to be worth trillions of dollars.

The goal is to place a lander on the lunar surface to mine and process regolith for water, oxygen, metals and an isotope called helium-3, which may prove useful for fueling future fusion reactors.

SIGN UP FOR THE AFRICA, EUROPE & MIDDLE EAST DIGEST

Regolith, Universe Today reported, is a dust-like material that covers the lunar surface and is the result of billions of years of meteor and comet impacts. If anyone ever lives on the moon, they could use the regolith to build habitats for a base.

The mission will be in charge of the European Space Agency in partnership with ArianeGroup, Popular Mechanics reported. It will also count with the participation of Part-Time Scientists, a German group and former Google Lunar XPrize contestant.

Europe isn’t the only one getting on board of the lunar mining train. Both India and China have floated ideas about extracting Helium-3 from the Earth’s natural satellite. Beijing has already landed on the moon twice in the 21st century, with more missions to follow.

There are an estimated one million tonnes of helium-3 in the moon, though only 25% of that could be brought to Earth, Gerald Kulcinski, director of the Fusion Technology Institute at the University of Wisconsin-Madison and a former member of the NASA Advisory Council told Bloomberg last year.

But that’s enough to meet the world’s current energy demands for at least two, and maybe as many as five, centuries, said the expert said, who estimates that helium-3 is worth almost $5 billion a tonne.

No longer science fiction

After being considered mostly a science-fiction tale, governments are now rushing to implement programs and legislation that allow them to join the race for mining in space.

#### Emerging moon development is inevitable and causes accidental and intentional artifact destruction – heritage sites would be destroyed inevitably by public actors – OST allows it and overriding current OST policies would deck scientific research and space stability

Pace & Hertzfeld 13 [Dr. Henry R. Hertzfeld is a Research Professor of Space Policy and International Affairs in the Space Policy Institute at the Elliott School of International Affairs. Scott Norman Pace currently serves as the Executive Secretary of the National Space Council. Pace was formerly the Director of the Space Policy Institute at the Elliott School of International Affairs at George Washington University, where he was also a Professor of the Practice of International Affairs. “International Cooperation on Human Lunar Heritage.” <https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/7/314/files/2018/10/Hertzfeld-and-Pace-International-Cooperation-on-Human-Lunar-Heritage-t984sx.pdf>]

The U.S. Apollo Space Program was a premier technological accomplishment of the 20th century. Preserving the six historic landing sites of the manned Apollo missions, as well as the mementos and equipment still on the Moon from those and other U.S. (e.g., Ranger and Surveyor) and Soviet Union (e.g., Luna) missions is important. Some of the instruments on the lunar surface are still active, monitored, and provide valuable scientific information. But recent government and private-sector plans to explore and potentially use lunar resources for commercial activity raise questions about the use of the Moon and potential accidental or purposeful threats to the historic sites and scientific equipment there. Although some steps to protect these sites have been proposed, we suggest a better way, drawing on international, not U.S. unilateral, recognition for the sites.

Less than 2 years before the fi rst footsteps on the lunar surface on 20 July 1969 (see the image) , the United Nations Outer Space Treaty (OST) was drafted, ratifi ed, and came into force ( 1). Article II of the OST reinforced and formalized the international standard that outer space, the Moon, and other celestial bodies would not be subject to claims of sovereignty from any nation by any means, including appropriation. The OST prohibits ownership of territory or its appropriation by any state party to the treaty, which includes the United States, Russia, and 126 other nations. It does not prohibit the use of the Moon and its resources. In fact, the treaty emphasizes the importance of freedom of access to space for any nation and the importance of international cooperation in space exploration. These principles of the space treaties have enabled gains in science and technology and have contributed to international stability in space.

### Aquaculture

#### Aquaculture fails – companies lie about their efficiency and they’re not any more sustainable than farm animals

Bethune 18 (Claudette, Ph.D., pharmaceutics and pharmacokinetics, is an associate director of clinical development at a pharmaceutical company in California. From 2003 – 2006, Bethune was a senior scientist at the Norwegian Institute for Nutrition and Seafood Safety in Bergen, Norway, Organic Consumers Association, "Nordic Aquafarms' Claims of 'Sustainably Produced' Farmed Salmon for a Hungry World Don't Hold Up," <https://www.organicconsumers.org/blog/farmed-salmon-unsustainable-unhealthy> MDRJ)

The developers of today’s salmon aquaculture often claim that their industry is “sustainable.” In response to concerns regarding the dangers of open-net salmon pens—where feces, chemicals, parasites and disease are directly transmitted into the bodies of water in which they are located—certain companies are moving their salmon farms on land to “closed-containment” models. But are these farmed Atlantic salmon any more nutritious or sustainable than farmed land-animals? Is salmon farming really helping to feed a hungry world? Nordic Aquafarms (NAF), a Norway-based company that proposes to build a mega-sized closed-containment salmon farm in Maine, claims that “the world has a growing need for protein sources produced in a sustainable way” and that “farmed Atlantic salmon has proven to be a more sustainable product than most other comparable protein sources." However, reviewing the actual analysis and results in the scientific literature to date, it is clear that the results related to fish feed do not support the typical claims that closed-containment salmon farming operations can produce sustainable or more nutritious products than conventional salmon aquaculture. Currently, NAF has not yet stated unequivocally or publicly what the company intends to feed the salmon at its proposed Belfast, Maine facility, which is described as “one of the largest [salmon farms] in the world.” However, a review of what is currently used or available for use as feed for farm-raised salmon shows that none of the options pass the sustainability test, nor do they result in a more “nutritious” product for consumption. Misconceptions around the use of fish meal and fish oils in farmed-fish feed One of the key concerns about farming carnivorous and omnivorous fish such as Atlantic salmon is the use of fish meal and fish oils as ingredients in feed for farmed salmon. That’s because the production of fish meal and fish oils requires raising or catching vast quantities of other fish to produce—fish that could be directly used for human consumption. From a food security, safety, and sustainability perspective, it is highly questionable that farms that consume more fish in feed than they produce could rival the best available protein alternatives.

#### Food shortages don’t cause conflict.

Buhaug et al ‘15 [Halvard Buhaug, Peace Research Institute in Oslo an Norwegian University of Science and Technology. Tor Benjaminsen, Espen Sjaastad, Ole Magnus Theisen.] “Climate variability, food production shocks, and violent conflict in Sub-Saharan Africa” Environmental Research Letters, Volume 10, Number 12 (http://iopscience.iop.org/article/10.1088/1748-9326/10/12/125015) - MZhu

Across all models, we find relatively weak and insignificant effects for domestic food production and we also note that the sign of the coefficients shifts between outcome types. In this sense, table 1 implicitly contrasts both claims that political violence is more prevalent when basic needs are met (Salehyan and Hendrix 2014) and claims that agricultural income shocks increase civil conflict risk (von Uexkull 2014). The results are consistent with Koubi et al (2012) and van Weezel (2015), however, who conclude that rainfall—a significant determinant of yields in SSA—has little impact on conflict either directly or through economic performance. The covariate that best and most consistently explains temporal variation in political violence is the time-lagged conflict incidence indicator. Models 1–2 show that a new civil conflict is unlikely to break out if another one is already ongoing in the same country whereas Models 3–6, which capture the occurrence of less organized conflict, demonstrate that violence begets violence. Coups d'état (Models 7–8) exhibit a comparatively weak temporal correlation pattern in our data and are generally regarded as a highly unpredictable phenomenon (Luttwak 1979). Next, we estimate the same set of models on a subsample of 14 countries in SSA where rainfall has a large and significant positive effect on food production (figure 2(b); see supplementary information, section B for details). To better capture the influence of climate variability and reduce concerns with endogeneity, we further replace the standard OLS model with two-stage instrumental variable regression. The first stage in this model estimates the joint influence of annual rainfall (linear and squared terms) and temperature (linear) on contemporaneous food production. This effect then constitutes the exogenous instrument for food production in the second stage. The results are reported in table 2. Mirroring the results presented above, we fail to uncover a robust signal for agricultural performance, although the sign of the coefficient for food production now remains negative in seven of the eight specifications. Food production shocks may have different consequences depending on the socioeconomic context, so next we consider a series of interactive relationships. Specifically, we investigate the joint effect of food production and (i) low level of development, (ii) extent of discriminatory political system, and (iii) economic dependence on agriculture; three conditions whereby loss of income from agriculture might constitute a particular challenge to society. To model these interactions, we include time-varying regressors instead of country-fixed effects where (i) is represented by infant mortality rate (IMR; World Bank 2014), (ii) is captured using the Ethnic Power Relations v.1.1 data (Cederman et al 2010), while (iii) uses an index of agricultural contribution to GDP (World Bank 2014). Moreover, to preserve focus on temporal dynamics, food production is now operationalized as yearly deviation from the country mean, 1961–2009. We use additive inverse deviation values to ensure theoretical consistency among the components in the interaction terms. All models control for (ln) population size, conflict history, and a common time trend, and models without IMR and agricultural dependence additionally control for (ln) GDP per capita. The results are presented in table 3. Again, we are unsuccessful in establishing a consistent covariation pattern between agricultural performance and political violence. Interpreting the combined effect of interaction terms with continuous parameters is inherently difficult but figure 4 shows that food production is insignificantly related to all conflict outcomes across levels of socioeconomic development for all three interaction terms. The sole exception is the result in Model 24, where lower food production in highly discriminatory societies is negatively associated with non-state conflict. This result would seem to contradict the standard scarcity thesis (Homer-Dixon 1999) although it is consistent with observations that conflict is more prevalent during surplus years (Witsenburg and Adano 2009, Salehyan and Hendrix 2014). Mirroring earlier research, ethnopolitical exclusion is strongly related to higher civil conflict risk, but not necessarily to other forms of political violence. Infant mortality rate and economic dependence on agriculture appear largely irrelevant. While this may come as a surprise, recall that most countries in SSA are characterized by underdevelopment and a large agricultural sector, implying that the variation in values on these indicators is modest. Large parameter uncertainties and p-values above the conventional significance threshold (5%) may disguise substantively important effects (Ward et al 2010). Accordingly, as a final assessment, we conduct a set of out-of-sample simulations and compare predictions for models with and without food production. The models are estimated on a subset of the full sample, in this case all years before 2000, and the estimated effects are then used to predict conflict outcomes out of sample, i.e., the 2000–09 period. Figure 5 shows the predicted values from four pairs of models that are specified similarly to Models 17, 20, 23, and 26, except for the shorter time period and the fact that one model in each pair drops the food production deviation variable. For civil conflict and social unrest, the models generate very similar predictions, signaling that agricultural performance adds little to the models' predictive power. There is more spread in the predictions for the remaining two outcome categories. Puzzlingly, the model without food production performs better in both cases—i.e., the Receiver Operating Characteristics curves have higher 'Area Under the Curve' scores. We hesitate to put too much emphasis on the ROC tests, given the rareness of the outcomes (notably Models 17 and 26) and the relatively small training samples (Models 20 and 23), but nonetheless the patterns observed in the out-of-sample simulations substantiate the regression results reported above; fluctuations in agricultural output explain little of the observed variation in political violence in post-colonial Sub-Saharan Africa. 5. Concluding remarks Emerging evidence suggests that food price shocks are associated with an increase in social unrest (Smith 2014, Bellemare 2015, Hendrix and Haggard 2015, Weinberg and Bakker 2015). Yet, the robust 'non-finding' presented here implies that so-called 'food riots' play out largely isolated from climate-sensitive production dynamics in the affected countries. Likewise, claims that adverse weather and harvest failure drive contemporary violence in Africa (e.g., Hsiang et al 2013, IFPRI 2015) are not supported by our analysis. Instead, social protest and rebellion during times of food price spikes may be better understood as reactions to poor and unjust government policies, corruption, repression, and market failure (e.g., Bush 2010, Buhaug and Urdal 2013, Sneyd et al 2013, Chenoweth and Ulfelder 2015).

### Prolif Good

**Even if they’re right that an accidental war is possible, vote neg. The framing question is not whether there is a risk prolif breaks down --- it’s whether a world of prolif is net-more peaceful --- default neg on the historical record.**

**Sechser 5** (Todd, Assistant Prof. Politics specializing in International Security—Stanford U., “How Organizational Pathologies Could Make Nuclear Proliferation Safer”, Presented at the annual conference of the Midwest Political Science Association, 4-7, \*I had to ILL this. I don’t think it’s available online)

A second counterargument to the optimist position is the claim that even if proliferation optimism enjoys greater theoretical tenability than previously thought, this does not make its position practically viable. Betts (1999: 65-66) writes that policy makers “do not marvel at all the cases where nuclear weapons will make the world safer, but worry about the exceptions where things will go wrong. . . one exception to the rule may be too many.”13 Likewise, Feaver (1993: 162) argues that even 99.5% prognostic accuracy would be insufficient for proliferation optimism to mount a persuasive case: “At best, rational deterrence theory can predict that nuclear deterrence should assure peace most of the time. Most is not all.” And Sagan (2003b: 184) contends that until military organizations are “perfect,” there is sufficient reason to be pessimistic about the effects of proliferation.14 As long as there is a chance that proliferation might entail some negative effects, the argument holds, then why not play it safe? **This** staggering **burden of proof is flawed** for two reasons. First, obscures the cost-benefit analysis inherent in any policy deliberation. The appropriate question is not whether the spread of nuclear weapons will result in any nuclear disasters, but whether a world with proliferation would on balance be more peaceful and more stable than a world without it. The issue is whether the benefits are likely to outweigh the costs. If one believes, for example, that nuclear proliferation would eventually result in a preventive war somewhere but that it would also deter numerous conventional wars, then the net overall benefit might justify a more relaxed nonproliferation policy. Second, the argument obscures the fact that proliferation pessimism to date does not possess a “99.5%” record of accuracy—rather, its record stands at 100%. Of course, the absence of nuclear catastrophe in the past does not assure its absence in the future. But theories ultimately aim to predict outcomes, and despite unearthing a trove of nuclear near-misses, the theory of proliferation pessimism has not succeeded in accomplishing this task. Existing research has successfully shown that the theory’s predicted causal mechanisms have operated in organizations that handle nu-clear weapons, but this is not the same as showing that these mechanisms generate the theory’s predicted outcomes. Even a major counterforce strike against a new nuclear power would not immediately vindicate pessimism—at least not until case study researchers were able to show that the causal mechanisms they specified (that is, preventive war pressures triggered by military biases) were indeed in operation.

#### Proliferation dampens conflict --- only our evidence does a statistical, controlled study.

Akisato Suzuki, June 2015. Akisato, Researcher at the Institute for International Conflict Resolution and Reconstruction, School of Law and Government, Dublin City University, MA in Violence, Terrorism and Security at Queen's University, “Is more better or worse? New empirics on nuclear proliferation and interstate conflict by Random Forests,” Research and Politics, SagePub

Given these conflict-reducing/provoking effects of nuclear proliferation, what overall effect would nuclear proliferation have on a systemic propensity for conflict? This is difficult to answer, not only due to the controversy over whether nuclear states are more or less prone to conflict, but also because the existing theories do not explain whether those conflict-reducing/provoking effects are large enough to influence a systemic propensity for interstate conflict, given the ratio of nuclear states to non-nuclear states in the system. This challenge motivates the empirical examination of the relationship between nuclear proliferation and a systemic propensity for conflict.

Empirical investigation by Random Forests

The interstate–systemic year data are used here to investigate the relationship between nuclear proliferation and a systemic propensity for interstate conflict. The dependent variable is the number of militarized interstate dispute onsets (Palmer et al., 2015; version 4.01 is used) per systemic-year, standardized as the ratio to the number of states in the interstate system (Correlates of War Project, 2011) – hereafter, the ‘dispute–state ratio’. Observations one year ahead (t+1) are used to make sure that causal effects precede a variation in the dispute–state ratio.2

Two regressors are used to examine the effect of nuclear proliferation: the number of nuclear states in the interstate system; and a count of the years since the number of nuclear states changes (hereafter ‘nuclear year counter’), measuring the effect of new nuclear states (Horowitz, 2009). The data about nuclear states are from Gartzke and Kroenig (2009); additionally, the current paper codes North Korea as a nuclear state since 2009 (Table 1).3

The model also includes the number of democratic states (Polity2 score ⩾ 6 in Marshall, 2013) in the interstate system, the gross world product (Earth Policy Institute, 2012), and the binary variable of unipolarity (coded zero until 1989 and one from 1990; see Monteiro, 2011/2012); these three variables control for democratic peace (Russett and Oneal, 2001), capitalist peace (Gartzke, 2007), and polarity (Monteiro, 2011/2012) respectively. The number of nuclear states and these control variables suffer from multicollinearity (see Table A-9 in the online appendix), and this paer later explains how to resolve this problem. A lagged dependent variable is also included to address the temporal dependence of time-series data. The temporal scope is 1950–2009 (i.e. N=59) due to the data availability and the use of the dependent variable at t+1. The descriptive statistics of all variables are displayed in Table 2.4.

As mentioned in the introduction, this paper uses the machine learning, non-parametric method Random Forests for the empirical investigation.5 Although it is unfamiliar to most political science and international relations analysts, Random Forests has been widely used in numerous scientific studies (Strobl et al., 2009: 324; Strobl et al., 2008). The popularity of the method is also apparent from the fact that Breiman’s (2001) original paper has been cited 12,721 times in the literature.6

Random Forests generates two useful analytics: first, ‘conditional variable importance’ measures how ‘important’ each regressor is, conditional on the remaining regressors (Hothorn et al., 2006; Strobl et al., 2007, 2008). This is analogous to statistical significance in conventional regression models. The significance threshold proposed by Strobl et al. (2009: 343) is whether the importance score of a regressor is negative, zero, or lower than the absolute value of the lowest negative score. If none applies, the regressor is considered as important; and the second relevant analytic is a partial dependence plot (Friedman, 2001). This estimates the marginal effect of each regressor on the dependent variable while taking the remaining regressors into consideration.

Random Forests has three attractive and distinctive characteristics for the purposes of this paper: first, the estimation of conditional variable importance and partial dependence plots enable conventional applied researchers to interpret non-parametric analysis in an intuitive way; second, Random Forests can examine non-linearity (Strobl et al., 2009: 339–341), which is desirable because, as already noted, some theories expect non-linearity between nuclear proliferation and a systemic propensity for conflict; and finally, it can cope with potential interactions and multicollinearity between regressors (Strobl et al., 2009: 339–341; Strobl et al., 2008). As noted before, most of the regressors here are highly correlated, and also it is plausible to anticipate some interaction effect between them (e.g. the number of democratic states and the gross world product). The specific capabilities of Random Forests are therefore essential.

The estimation of conditional variable importance shows that the nuclear year counter has a negative importance score.7 Thus, the nuclear year counter is not important in explaining the dispute–state ratio. This suggests that the optimist theory is supported. The remaining regressors have an importance score higher than the absolute value of the importance score of the nuclear year counter, meaning that they are all important. Controlling for democratic peace, capitalist peace, and polarity, the number of nuclear states is still a significant predictor in explaining a systemic propensity for interstate conflict.

Figure 1 presents the partial dependence plots of the model.8 First, on average, a larger number of nuclear states is associated with a lower dispute–state ratio, although the changes from two nuclear states to three and from six to seven increase the ratio instead. Thus, the relationship is empirically non-linear, as Bueno de Mesquita and Riker (1982) and Intriligator and Brito (1981) expected in part. Overall, however, the optimist theory is supported, and the change from two nuclear states to nine nuclear states decreases the dispute–state ratio approximately from 0.228 to 0.18. This means that, if there are 194 states in the system (as there were in 2009), the number of militarized interstate dispute onsets per system-year decreases approximately from 44 to 35. This is a substantively significant decline.

Second, the nuclear year counter shows a concave relationship with the dispute–state ratio, suggesting that new nuclear states are less prone to conflict than middle-aged nuclear states. Thus, the pessimist theory finds no support from either the variable importance estimation or the partial dependence plot.

Finally, as for the control variables, the number of democratic states and the gross world product have a complex non-linear relationship with the dispute–state ratio, but if the number of democratic states and the gross world product are sufficiently large, they tend to decrease the dispute–state ratio. Their substantive effects are also significant, though not as much as the number of nuclear states. When comparing the effect of their lowest and highest values (23 and 94 in the number of democratic states and 7 and 71.2 in the gross world product), the number of democratic states decreases the number of militarized interstate dispute onsets per system-year approximately from 40 to 37, and the gross world product from 44 to 37. Unipolarity is also associated with a decline in the dispute–state ratio, suggesting that unipolarity is better than bipolarity in terms of a systemic propensity for interstate conflict; however, its effect is negligible, as it reduces the number of militarized interstate dispute onsets per system-year from 39 to 38. One caveat is, as explained in the online appendix, that the results of the number of democratic states and unipolarity are significantly sensitive to a parameter setting. Thus, these predictors are less robust, and the aforementioned points about them should be treated with caution.

Discussion and concluding remarks

The main findings reveal that the optimist expectation of the relationship between nuclear proliferation and interstate conflict is empirically supported:9 first, a larger number of nuclear states on average decreases the systemic propensity for interstate conflict; and second, there is no clear evidence that the emergence of new nuclear states increases the systemic propensity for interstate conflict. Gartzke and Jo (2009) argue that nuclear weapons themselves have no exogenous effect on the probability of conflict, because when a state is engaged in or expects to engage in conflict, it may develop nuclear weapons to keep fighting, or to prepare for, that conflict. If this selection effect existed, the analysis should overestimate the conflict-provoking effect of nuclear proliferation in the above model. Still, the results indicate that a larger number of nuclear states are associated with fewer disputes in the system.

This conclusion, however, raises questions about how to reconcile this study’s findings with those of a recent quantitative dyadic-level study (Bell and Miller, 2015). The current paper finds that nuclear proliferation decreases the systemic propensity for interstate conflict, while Bell and Miller (2015) find that nuclear symmetry has no significant effect on dyadic conflict, but that nuclear asymmetry is associated with a higher probability of dyadic conflict. It is possible that nuclear proliferation decreases conflict through the conflict-mitigating effects of extended nuclear deterrence and/or fear of nuclear states’ intervention, to the extent that these effects overwhelm the conflict-provoking effect of nuclear–asymmetrical dyads. Thus, dyadic-level empirics cannot solely be relied on to infer causal links between nuclear proliferation and a systemic propensity for conflict. The systemic-level empirics deserve attention.

#### Limiting prolif raises the transaction costs and causes a de-fact shift to CBWs.

Neil Narang, 4/6/2016. Assistant Professor in the Department of Political Science at the University of California, Santa Barbara, Senior Advisor in the Office of the Secretary of Defense for Policy on a Council on Foreign Relations International Affairs Fellowship. “All Together Now? Questioning WMDs as a Useful Analytical Unit for Understanding Chemical and Biological Weapons Proliferation,” The Nonproliferation Review. Volume 22. Issue 3-4. pp. 457-468. Taylor and Francis.

The first inference that one may be tempted to draw from past findings is that a policy focused on achieving reductions in the global nuclear stockpile could cause a rise in chemical and biological weapons proliferation as more states view them as a “poor man's atomic bomb.” As noted above, our findings suggested that states appear to seek chemical and biological weapons for many of the same reasons as they pursue nuclear weapons. Furthermore, our findings also indicate that states that do not possess nuclear weapons appear to be systematically more likely to pursue chemical and biological weapons than states that do possess them. When combined, it may seem reasonable to suppose that, conditional on some level of demand for one of these types of weapons, reductions in the global supply of nuclear weapons could cause some states to pursue chemical and biological weapons as “imperfect substitutes” for the deterrence and compellence benefits of nuclear weapons.

A second inference that one may be tempted to draw is that a strengthened NPT may increase the risk of chemical and biological weapons proliferation. Understood in the terms of our study, policies and institutions designed to monitor and sanction the unilateral pursuit or dissemination of nuclear weapons material and technical expertise—like the NPT or the Nuclear Suppliers Group—might be understood as supply constraints that effectively increase the transaction costs of nuclear weapons acquisition. Furthermore, previous research has shown that the supply of sensitive nuclear assistance and civilian nuclear assistance are both positively associated with the risk of nuclear weapons pursuit and acquisition across states and over time.17

When combined, it may seem reasonable to suppose that, given some demand for a “weapon of mass destruction,” chemical and biological weapons could seem like relatively cheaper pursuits under a more robust global nuclear nonproliferation regime that further regulates the supply of nuclear weapons.

A third inference that one may be tempted to draw is that reductions in the global supply of nuclear weapons and a strengthening of the nuclear nonproliferation regime could increase the risk of chemical and biological weapons pursuit by terrorist groups. If one is willing to assume terrorist groups aim to influence governments by threatening to impose costs in order to achieve concessions— whether this be through strategies like coercion, provocation, spoiling, or outbidding—then it may seem reasonable to suppose that limiting the availability of nuclear weapons might shift the demand to other coercive instruments such as chemical or biological weapons.18