# Offs

## 1 – T

#### Interpretation: debaters must only defend that the appropriation of outer space by private entities is unjust. To clarify, they must only defend private entities.

#### Private entities are non-governmental.

Dunk 11 – Frans G. von der Dunk, 2011, [“The Origins of Authorisation: Article VI of the Outer Space Treaty and International Space Law,” University of Nebraska] Justin

4. Interpreting Article VI of the Outer Space Treaty One main novel feature of Article VI stood out with reference to the role of private enterprise in this context. Contrary to the version of the concept applicable under general international law, where “direct state responsibility” only pertained to acts somehow directly attributable to a state and states could only be addressed for acts by private actors under “indirect,” “due care”/“due diligence” responsibility,18 Article VI made no difference as to whether the activities at issue were the state’s own (“whether such activities are carried on by governmental agencies” . . .) or those of private actors (. . . “or by non-governmental entities”). The interests of the Soviet Union in ensuring that, whomever would actually conduct a certain space activity, some state or other could be held responsible for its compliance with applicable rules of space law to that extent had prevailed. However, the general acceptance of Article VI as cornerstone of the Outer Space Treaty unfortunately was far from the end of the story. Partly, this was the consequence of key principles being left undefined.

#### That excludes governments and nations.

Upcounsel [UpCounsel is an interactive online service that makes it faster and easier for businesses to find and hire legal help solely based on their preferences. “Private Entity: Everything You Need to Know.” <https://www.upcounsel.com/private-entity>] Justin

A private entity can be a partnership, corporation, individual, nonprofit organization, company, or any other organized group that is not government-affiliated. Indian tribes and foreign public entities are not considered private entities.

#### Violation—they advocate for “the commons” in which no individual, including governments, own property in outer space.

#### This bans appropriation by countries, which aren’t private entities.

Babcock 19 [H., 2019. THE PUBLIC TRUST DOCTRINE, OUTER SPACE, AND THE GLOBAL COMMONS: TIME TO CALL HOME ET. [online] Lawreview.syr.edu. Available at: <https://lawreview.syr.edu/wp-content/uploads/2019/09/H-Babcock-Article-Final-Document-v2.pdf#page=67> [Accessed 15 December 2021] Professor Babcock served as general counsel to the National Audubon Society from 1987-91 and as deputy general counsel and Director of Audubon’s Public Lands and Water Program from 1981-87. Previously, she was a partner with Blum, Nash & Railsback, where she focused on energy and environmental issues, and an associate at LeBoeuf, Lamb, Leiby & MacRae where she represented utilities in the nuclear licensing process. From 1977-79, she served as a Deputy Assistant Secretary of Energy and Minerals in the U.S. Department of the Interior. Professor Babcock has taught environmental and natural resources law as a visiting professor at Pace University Law School and as an adjunct at the University of Pennsylvania, Yale, Catholic University, and Antioch law schools. Professor Babcock was a member of the Standing Committee on Environmental Law of the American Bar Association, and served on the Clinton-Gore Transition Team] Justin

This Section discusses what about space makes it more like a commons than private property. Indeed, early space treaties treated space as though it was a commons.334 But, like private property, commons also have negative features that may be problematic in space, and simply declaring something a commons does not dictate the rules under which it should be managed. When various commons management approaches are tried, like the law of first possession under a private property regime, they are also found wanting.335 1. Early Treaties and Analogous Areas of the Globe Early treaties, such as the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, which “requires space-faring nations to rescue stranded astronauts and wayward objects and return them to the appropriate country,” “envisions space as a commons beyond the possession and control of any one nation or people.”336 So too, the 1972 Convention on International Liability for Damage Caused by Space Objects, which “was established to resolve concerns over financial liability in the event that a spacecraft or other space machine causes damage to other space-based or [e]arth-bound assets,” and the 1975 Convention on Registration of Objects Launched into Outer Space, which “imposes a requirement that states maintain and submit to the [United Nations] thorough records of all objects launched into outer space.”337 Indeed, the 1967 OST “allocates the use of orbital space as if it were a common property resource”338 by declaring outer space an open access resource and banning appropriation by any country.339 Jared Taylor notes that “during the Treaty’s preliminary negotiations, one drafter analogized the absence of property rights in space to the absence of property rights in the ocean.”340 According to Taylor, later treaties, as well as the practices engaged in by spacefaring nations and private companies, “have confirmed the spirit of the Outer Space Treaty: space is a resource from which no nation or private entity can be excluded”341—a true open access commons.342 The 1959 Antarctic Treaty343 established “the foundation for international space law.”344 Like outer space, Antarctica and the oceans “presented a dilemma regarding habitation and defense. No nation occupied these territories and no nation desired a ‘race to own’ without a guarantee of who would emerge victorious.”345 Both the Antarctic Treaty and the Deep Seabed Hard Mineral Resources Act (the “Deep Seabed Act”)346 eschewed the concept of private property as well as the rights of first possession, in part, because the riches of those areas might allow developing nations to share in those riches as opposed to remaining economically marginalized.347 The Deep Seabed Act provides a model for how to regulate activities in a commons, like outer space, which it manages to do without privatizing the marine resource.348 As a result, it is “customary and accepted legal reasoning” to analogize between private ownership rights outside of national sovereignty, like those the Deep Seabed Act granted, and a “land claims recognition law for celestial bodies.”349 “The oceans and Antarctica . . . have much in common with the moon. They can be harsh environments that are difficult to reach to extract minerals [and are resource rich]. They are also designated international areas in which no nation has a sovereign claim.”350 The history of the earth’s oceans is a progression from “the domain of conquering armadas and privateers, when good legal title required as little as arbitrary lines drawn on a map,” to the concept of a “free sea” open to all countries, where no single country could “obstruct the use of that privilege.”351 International space law built on that history of open passage and “free sea.”352 The roots of the idea of granting non-space faring nations right of access can also be found in the 1958 Geneva Convention on the High Seas, which granted “landlocked states the right to sail the oceans by requiring their coastal neighbors to grant free passage over land and through territorial waters.”353 The legal framework of UNCLOS united “a broad spectrum of national and private interests into a shared agreement on the possession and usage of a seemingly borderless area of the global commons,” setting another useful precedent for outer space.354 However, UNCLOS, as a model, is impractical in “the vast reaches of outer space”—space is simply too vast and unlimited.355 2. Common Property Common property is property, the rights to which belong to more than one entity.356 Like private property, common property is endemic to life in the United States and always has been, even though many Americans view it ambivalently.357 There is considerable overlap between property held in common and that which is privately owned. Carol Rose suggests that collective, but privately owned property, like a tenancy in common, “has all the hallmarks of individual private property,” and, therefore, should not be seen as “fundamentally problematic or prone to inefficient use.”358 Additionally, the plasticity of the commons, demonstrated by the appearance of new commons, like the “knowledge commons, cultural commons, infrastructure commons, and neighborhood commons,” indicates that the concept might fit in outer space.359 A commons, or CPR, is frequently asserted to resist “privatization and/or commodification of those resources,” making it oppositional to a claim that something is private property.360 Sheila Foster and Christian Iaione’s suggestion that the “language of the ‘commons’” is often used to prevent the enclosure of public urban space “by economic elites,” resonates with the situation in outer space where wealthy countries or private companies want to claim or enclose space that the public owns.361 A claim that something is a commons acknowledges that “it is a shared resource that belongs to all of its inhabitants,”362 like outer space, which is the “province of all mankind.”363

#### Don’t let them shift out of the violation – inserted lines below.

1AC Vollmer- Therefore, anyone utilizing or benefitting from the utilization of the geospace commons has an equitable duty to ensure its sustainability

1AC Vollmer- shared global liability will consider the responsibility of nation-states and private entities in isolation

1AC Silverstein- These costs, rooted in a failure to govern space as a commons, will be borne by all space actors, including emerging states

1AC Dardot- Beyond this collusion between the state and private companies, what emerges here is the powerful homology between state and private ownership

#### We’ll pre-empt plan text in a vacuum – 1] Anything else lets the 1ar recontextualize their advocacy in infinite different ways not grounded by their 1ac to moot neg offense 2] 1AC offense is based off of the implementation and effects of the advantage which even if they win it, vote neg on presumption cuz they can’t solve anything

#### Standards

#### 1] Precision—they justify doing away with random words because the aff is no longer bounded by the resolution which decks predictability. Independent voter for jurisdiction—the judge can’t vote aff if there wasn’t a legitimate aff.

#### 2] Limits—tangentially related affs are unpredictable and infinite because there’s no stasis to the resolution—exacerbated by 195 governments and permutations.

#### Two impacts:

#### A] Kills neg prep and ground because they can spike out of links by defending governments and create infinite prep burdens of unpredictable affs—exacerbated by infinite preround prep.

#### B] They inflate aff solvency by allowing a laundry list of external actions that private entities can’t do like government mission, NASA operations, testing ASATs, and more because private entities are qualitatively different. That impossible to negate because generics are beaten by overpowered affs.

#### CI – Reasonability is arbitrary, CI avoids judge intervention.

#### No rvis – You don’t win for being fair, and incentivizes baiting.

## 2 - China/He-3 DA

#### The 1AR will say they’re too small to link to the DA – wrong - SpaceX is on the brink of bankruptcy in the squo – even a small increase in fines will drive it out of business

BBC 18

Elon Musk: SpaceX and Tesla alive 'by skin of their teeth' BBC NEWS Published 11 March 2018 <https://www.bbc.com/news/business-43365710> -CAT

Elon Musk says his companies SpaceX and Tesla are both still alive only "by the skin of their teeth". The entrepreneur told an audience at the South by South West (SXSW) conference that both companies almost went bankrupt in 2008. "I gave both SpaceX and Tesla a probability of less than 10% likely to succeed," he said during a Q&A session. "At the beginning in 2002, I wouldn't even let my own friends invest as I didn't want to lose their money." Mr Musk said he made $180m (£130m) when PayPal was acquired by eBay in 2002, and he initially put $90m into SpaceX and Tesla, but the costs kept mounting. He said 2008 was an incredibly difficult year - SpaceX's Falcon 1 rocket failed for the third time, and Tesla almost went bankrupt two days before Christmas. By this point, he only had about $40m left. "I could put it all into one company, and the other company would definitely die, or if I split it into both SpaceX and Tesla, then they both might die," he said. "And when you put your energy into building something, it's your baby, so I couldn't choose. I put the money into both, and thank goodness they both came through." Elon Musk: Mars ship test flights 'next year' The man who sent his sports car into space The story of Elon Musk's rocket launch Mr Musk also got divorced, and he said he had to borrow money from his friends to pay his rent. "SpaceX is alive by the skin of its teeth, and so is Tesla - if things had just gone a little differently, both companies would be dead," he said. Mr Musk said he had to be the chief engineer for the Falcon 1 because he couldn't get any other suitable candidates to join the company, and he didn't want to risk his venture on engineers he felt weren't of the right standard. And although he can now afford to hire as many talented engineers as he would like, he still continues to spend 80-90% of his time working on engineering and design at both SpaceX and Tesla, leaving other executives to manage the business side of the companies. However, he said that over time, he felt Tesla had caused him far "more drama" than SpaceX. He also said his tunnelling firm, the Boring Company, was started as a joke because he thought the name was funny, and although he tweets about it a lot, it actually only takes up about 2% of his time. Opportunities on Mars When asked why he decided to go into the space industry and electric cars, he explained that he had been interested in both subjects when he was in university. He also said he didn't feel enough progress had been made in recent years on space travel. "I wondered why we weren't making progress with getting people on the moon, and where are all the space hotels we were promised in 2001: A Space Odyssey?" he said. "The genesis of SpaceX was not to create a company, but how do we get Nasa's budget to be bigger?" Mr Musk remains convinced that life on Mars is both possible and necessary. He fears another "dark age" should a third world war occur, and feels that Mars will be integral to helping the human race survive and regenerate. He also feels there are plentiful business opportunities there. "They will start off building a rudimentary base... then this will open up a world of new opportunities, because Mars will need pizza joints, great bars - Mars Bars," he said.

#### SpaceX is losing money hand over fist

Hamilton 21

Isobel Asher Hamilton Isobel (she/her) is a senior tech reporter at Business Insider. Elon Musk says Starlink will need up to $30 billion to survive. 'If we succeed in not going bankrupt, then that'll be great.' Business Insider, June 30, 2021 <https://www.businessinsider.com/elon-musk-starlink-spacex-bankruptcy-funding-30-billion-2021-6> -CAT

Elon Musk's constellation of internet satellites, Starlink, will need up to $30 billion in funding to survive, the billionaire said on Tuesday. Speaking at the Barcelona Mobile World Congress tech conference via video link, the SpaceX CEO said the projections for Starlink's business costs were estimated between $20 billion and $30 billion, Reuters reported. During the same conference, Musk said the company was losing money on its Starlink terminals, which allow users to receive the broadband that the satellites already in orbit are beaming down. According to Musk, the terminals cost $1,000 to make and the company sells them for $500 — plus a $99 monthly subscription. The company will soon release a new model of its terminal which will be cheaper to make, he said. Musk also said Starlink had signed partnerships with two "major country telcos," but did not disclose their names. Musk tweeted last week that Starlink had 69,420 active users. "If we succeed in not going bankrupt, then that'll be great, and we can move on from there," Musk said, per Reuters. Musk has said in the past that avoiding bankruptcy was the biggest challenge facing any high-speed internet satellite company. Starlink is part of Musk's space exploration company SpaceX. Its aim is to provide high-speed broadband to remote parts of the world using a fleet of satellites. As of May 2021, there were almost 1,500 satellites in orbit, per Space News. Musk has said he wants to launch a total of 42,000 satellites. SpaceX's president Gwynne Shotwell said earlier this month Starlink could provide global coverage by September 2021 — though Musk said during Tuesday's conference that this could be achieved a month earlier, in August.

#### A viable SpaceX is the only thing preventing Chinese dominance of outer space – they’ve already copied SpaceX’s innovations

Berger 21

Eric Berger, reporter, CNN. Why China's space program could overtake NASA, CNN.com April 1, 2021. Eric Berger, a reporter and editor based in Houston, is the author of ["LIFTOFF: Elon Musk and the Desperate Early Days that Launched SpaceX."](https://www.harpercollins.com/products/liftoff-eric-berger?variant=32126620205090) After a long career at the Houston Chronicle, he joined Ars Technica in 2015 as the site's senior space editor, covering SpaceX, NASA and everything beyond. He was a Pulitzer Prize finalist for his coverage of Hurricane Ike in the Houston Chronicle in 2008. <https://www.cnn.com/2021/04/01/opinions/china-space-race-us-spacex-berger/index.html> -CAT

China has a good chance of becoming the dominant space power in the 21st century, and it's not just looking to copy NASA on the way to the top. Instead, the country is paying close attention to what innovative US companies like SpaceX are doing as well. To get ahead in space, communism is learning from capitalism. In the summer of 2019, a small Chinese rocket launched from an inland spaceport in the southern part of the country. Close-up photos, posted afterward on Chinese social media accounts, showed small grid fins affixed to the upper part of this Long March 2C rocket for the first time. They were virtually identical in design to the grid fins SpaceX uses to steer its Falcon 9 rocket through the atmosphere for landings on its ocean-based drone ships. A year after this test, China's main space contractor revealed plans to develop the ability to reuse its Long March 8 booster, which is powered by kerosene fuel, the same type of power that fuels SpaceX rockets. By 2025, Chinese officials said, this rocket would be capable of landing on a sea platform like SpaceX's Falcon 9 booster. And it is not just the Chinese government contractors that are emulating SpaceX. A growing number of semi-private Chinese companies have also announced plans to develop reusable rockets. Chinese firms such as LinkSpace and Galactic Energy have released schematics that seem to mimic SpaceX technology. None of this should be particularly surprising. Government-launched enterprises in both Russia and Europe also recently revealed plans to develop reusable rockets that are similar both in appearance and function to the Falcon 9 booster. But what makes the Chinese efforts to emulate SpaceX particularly notable is the country's expansive ambitions in space and its vast resources to back up these long-term goals. Earlier this month, the Chinese government signed an agreement with Russia to work together to build a Moon base. China has also begun planning to launch crewed missions to Mars and deploy a massive space-based, commercial-scale solar power plant by 2050. They're playing the long game, and they're playing to win. Based on China's recent accomplishments in space, it would be wise to take these grand ambitions seriously. In December, China became only the third nation to return Moon rocks to Earth. Later this spring, it will seek to join the United States as only the second country to land and operate a rover on the surface of Mars. All the while, China is racing across a number of other fronts in space, from building an orbital space station to maturing anti-satellite capabilities in space to establishing a base on the moon. As China advances in space, NASA has spent more than $20 billion building a large rocket, the Space Launch System, that could soon be obsolete. And flying this single-use rocket is so expensive that, in combination with its Artemis program, NASA could exceed its congressional funds by more than 43%. NASA could also abandon the International Space Station in a few years. Meanwhile, China is training European astronauts and teaching them Chinese so that they might visit its large, modular space station. Some of these European astronauts may subsequently join the China-Russia lunar exploration effort. Increasingly, the US' main advantage over China lies in its burgeoning commercial space industry, led by SpaceX. If America wants to compete, it should unleash the full potential of SpaceX and other commercial space companies that seek to go further in space, faster and for less money. This kind of public-private partnership has already worked in low-Earth orbit, with NASA buying services from companies such as SpaceX, Northrop Grumman and Boeing to deliver cargo and astronauts to the International Space Station. This is one reason why, about five years ago, China began backing dozens of companies to commercialize rockets and satellites. The 21st century space race, therefore, is not so much between China and NASA. Rather, it is between China and the US commercial space industry. Astronauts relocated a spacecraft outside the International Space Station Astronauts relocated a spacecraft outside the International Space Station Nearly a decade ago, SpaceX attracted international acclaim when it began to successfully land its Falcon 9 rockets, accomplishing an engineering feat many previously deemed impossible or impractical. While historically rocket boosters have been discarded in the ocean after they expend their fuel on the way to orbit, SpaceX figured out how to land its boosters upright on platforms at sea and on land, allowing the company to recover and refurbish the rockets and save money. Later, the company strapped three of these Falcon 9 cores together to build a larger and much more powerful rocket, called the Falcon Heavy. And it is now testing an even larger, reusable booster, its Starship vehicle, intended to ferry humans to and from Mars. In late February, China unveiled strikingly similar space plans. The country's space agency said it would build a triple core rocket, which looks like a SpaceX Falcon Heavy. And it also confirmed plans to move forward with its titanic Long March 9 rocket, capable of lifting as much as 140 metric tons to low-Earth orbit, the same amount as the Saturn V rocket, an American super heavy-lift launch vehicle that remains the most powerful rocket that has ever flown successfully. This massive rocket would be unlike anything NASA built, however; Chinese officials, taking a page from the SpaceX playbook, said they would like it to be reusable. And, they added, they aim to one day launch the Long March 9 to take its taikonauts to Mars. While SpaceX became a transformational space company, the US and China have been locked in an increasingly intense battle for influence and economic resources on Earth. That conflict, which has already emerged in low-Earth orbit, will extend to the Moon and eventually Mars in the coming decades. In the contest for geopolitical influence and economic wealth, space will come to represent the ultimate high ground. China is definitely going. For now, the US and NASA have the advantage of a more robust space program and a stronger commercial space industry. But for the last decade, the US commercial space industry has succeeded despite Congress, not because of it. Unless Congress and NASA more closely embrace commercial space and follow a bold plan of exploration, China's constancy of purpose and mimicking of Western strengths will overcome this head start.

#### Chinese dominance would allow them to monopolize lunar Helium-3 and control the world’s economy.

Bilder 10

Richard B. Bilder, Foley & Lardner-Bascom Emeritus Professor of Law, University of Wisconsin Law School A LEGAL REGIME FOR THE MINING OF HELIUM-3 ON THE MOON: U.S. POLICY OPTIONS 33 Fordham Int’l L.J. 243 Fordham International Law Journal January, 2010 -CAT

A LEGAL REGIME FOR THE MINING OF HELIUM-3 ON THE MOON: U.S. POLICY OPTIONS During the past several years, the United States and three of the world’s other leading space powers, Russia, China, and India, have each announced their intent to establish a base on the Moon, in part with the purpose--or, in the case of the United States, at least the exploratory goal--of seeking to mine and bring to Earth helium-3 (“He-3”), an isotope1 of helium rarely found naturally on Earth but believed to be present in large amounts as a component of the lunar soil.2 The potential value of \*246 He-3 is that it is theoretically an ideal fuel for thermonuclear fusion power reactors, which could serve as a virtually limitless source of safe and non-polluting energy.3 For example, it is estimated that forty tons of liquefied He-3 brought from the Moon to the Earth--about the amount that would comfortably fit in the cargo bays of two current U.S. space shuttles--would provide sufficient fuel for He-3 fusion reactors to meet the full electrical needs of the United States, or one quarter of the entire world’s electrical needs, for an entire year.4 While the technological and economic feasibility of fusion-based nuclear energy, particularly fusion reactors utilizing He-3 \*247 as fuel, is still uncertain and contested, and its commercial realization at best decades away,5 the implications of such a development could be far-reaching and profound. Fusion energy could significantly reduce the world’s heavy dependence on fossil fuels, which are associated with environmental pollution, greenhouse gas emissions, and global warming--not to mention their rising price and role in recurrent geopolitical and economic tensions. Fusion energy could also provide a safer alternative to many countries’ growing reliance on energy generated from nuclear fission reactors, which hold the potential dangers of nuclear accidents, terrorism, weapons proliferation, and radioactive waste disposal. Moreover, in contrast to the prospect of depletion of terrestrial fossil fuels, it is estimated that there is sufficient He-3 present on the Moon to meet humanity’s rapidly growing energy needs for many centuries to come.6 Thus, despite the problematic future of He-3-based fusion energy, it is not surprising that the United States and other major powers are beginning to position themselves to ensure their future access to lunar He-3 resources. However, the growing interest in lunar He-3 poses its own problems. As yet, there is no international consensus on whether, or how, any nation or private entity can exploit or acquire title to lunar resources. The U.N.-developed 1967 Outer Space Treaty7 does not specifically address this question. The related U.N.-sponsored 1979 Moon Agreement8 purports to lay the groundwork for the eventual establishment of a regime for the exploitation of lunar resources, but that agreement has thus far been ratified by only a very few countries--not including the United States and none of which are currently leading space \*248 powers.9 Absent an agreed international legal framework, attempts by the United States or any other nation or private entity to acquire and bring to Earth significant quantities of He-3 could give rise to controversy and conflict. Indeed, without the security of an established legal regime, nations or private entities might well be reluctant to commit the very substantial money, effort, and resources necessary to mine, process, and transport back to Earth the amounts of lunar He-3 sufficient to support the broad-scale terrestrial use of He-3-based fusion energy. Consequently, it seems timely to revisit the issue of the legal regime potentially applicable to exploiting He-3 and other lunar resources.10 Part I of this Article will briefly discuss the technical \*249 and economic prospects for the development of He-3-based fusion energy. Part II lays out the present legal situation concerning the exploitation of lunar resources such as He-3. Part III analyzes whether it is prudent for the United States to seek an international lunar resource regime. Concluding that it would \*250 be, Part IV provides possible policy options for the United States concerning the establishment of an international legal regime capable of facilitating the development of He-3-based fusion energy. I. THE PROSPECTS FOR HE-3-BASED FUSION ENERGY11 He-3 is a component of the “solar wind” comprised of gas and charged particles continuously emitted by the sun into the solar system in the course of its thermonuclear fusion processes.12 During more than four billion years in which the solar wind has impacted the Moon, significant amounts of He-3, in addition to particles of other ionized components of the solar wind, have become embedded in the Moon’s regolith--the loose and dusty upper layer of rocks and soil comprising much of the Moon’s surface.13 While He-3 constitutes only a minute proportion of the lunar regolith,14 it is estimated that, altogether, there may be as much as one million metric tons of He-3 potentially recoverable \*251 from the Moon’s surface.15 This amount of He-3 is theoretically equivalent to ten times the energy content of all of the coal, oil, and natural gas economically recoverable on Earth.16 Since the Earth, unlike the Moon, possesses a magnetic field and atmosphere that deflect the solar wind, He-3 is rarely found naturally on Earth.17 The small amounts of He-3 available for research and experiment on Earth are derived principally from the decay of tritium used in thermonuclear weapons.18 While interest in lunar He-3 relates to its potential use as a fuel for thermonuclear power reactors,19 the technological and economic feasibility of fusion power itself has yet to be demonstrated.20 Unlike the engineering and material requirements for power production in the uranium and plutonium-fueled nuclear fission reactors now operating in the United States and a number of other countries, the generation of power by thermonuclear fusion requires the containment of ionized plasmas at extremely high temperatures, a feat not easily or economically achievable at present with existing materials and technology.21 Nevertheless, the enormous potential of fusion \*252 energy continues to spur persistent and intensive efforts to overcome these obstacles. One of the most significant efforts is the recent establishment, by a consortium of the European Union (through the European Atomic Energy Community), Japan, the People’s Republic of China, the Republic of India, the Republic of Korea, the Russian Federation, and the United States, of the International Thermonuclear Experimental Reactor (“ITER”),22 a large-scale, international experimental research project designed to explore the scientific and engineering feasibility of magnetic containment fusion power production.23 The program will be located in Cadarache, France, and is expected to cost over US$12 billion and continue for thirty years.24 For a number of reasons, including the limited terrestrial availability of He-3 and the very high temperatures required to achieve He-3-based fusion, most current research, and any first generation fusion power reactors, will likely be based on a fuel cycle involving the fusion of deuterium (“D”) and tritium (“T”), \*253 two isotopes of hydrogen available on Earth and capable of fusing at considerably lower temperatures.25 However, an He-3-D fuel cycle, if and when technically achievable, theoretically offers significant advantages as compared with the D-T fuel cycle. Unlike a D-T fusion reaction, which results in considerable neutron radiation, an He-3-D fusion reaction would produce little radioactivity and a substantially higher proportion of directly usable energy.26 More specifically, the comparative \*254 advantages of an He-3-D fuel cycle over a D-T fuel cycle would include: (1) increased electrical conversion efficiency; (2) reduced radiation damage to containment vessels, obviating the need for frequent expensive replacement; (3) reduced radioactive waste, with consequent reduced costs of protection and disposal; (4) increased levels of safety in the event of accident; and (5) potentially lower costs of electricity production.27 In particular, an He-3-D fuel cycle would significantly reduce the risk of nuclear proliferation because an He-3-D reaction, unlike a D-T reaction, would produce few neutrons and could not be readily employed to produce plutonium or other weapons-grade fissile materials.28 Consequently, interest in developing He-3-fueled thermonuclear energy is likely to continue. How would lunar He-3 be extracted and transported to Earth?29 Because the solar wind components are weakly bound to the lunar regolith,30 it should be relatively easy to extract them utilizing reasonable extensions of existing technology. In one proposed scenario, once a lunar base is established, robotic lunar mining vehicles fitted with solar heat collectors would: (1) traverse appropriate areas of the Moon’s surface--probably, in particular, the lunar maria, or “seas”--scooping up the loose upper layer of the lunar regolith and sizing it into small particles; (2) utilize solar energy to process and heat the collected regolith to the temperatures necessary to release, separate, and collect in a gaseous state the He-3, along with certain other solar-wind elements embedded in the regolith particles; (3) discharge the spent regolith back to the lunar surface; and (4) return with the collected He-3 and other gaseous byproducts to the lunar base.31 \*255 The collected He-3 gas could then be liquified in the lunar cold and transported to Earth, perhaps in remotely-operated shuttles.32 Importantly, this type of mining operation could result in the collection not only of He-3 but also significant amounts of hydrogen, oxygen, nitrogen, carbon dioxide, and water, all potentially very useful--indeed, perhaps indispensable--for the maintenance of a lunar base or further outer space activities such as expeditions to Mars or other planets.33 Since He-3 is believed to comprise only a small proportion of the lunar regolith, it will probably be necessary to process large amounts of lunar regolith in order to obtain the quantities of He-3 necessary to sustain a large-scale terrestrial He-3-based power program. However, the extraction of He-3 and other solar wind components from the lunar soil seems in itself unlikely to have a significant detrimental impact on the lunar environment because the regolith will be discharged back to the Moon’s surface immediately after processing.34 Whether the production of lunar He-3-based fusion power will prove commercially viable remains a complex and disputed question. The commercial success of such a development will clearly depend, among other things, on the parallel and integrated achievement of both economically efficient He-3-fueled fusion power reactors and a sustainable lunar mining enterprise capable of economically extracting and returning to Earth an assured supply of He-3 to fuel such reactors; neither is worth pursuing without the other. However, the development of He-3-based fusion need not start from scratch, but instead will likely build on the substantial research and investment already committed to the development of fusion power more generally in ITER and other already ongoing projects. Moreover, the development of lunar He-3 mining can similarly build on--and indeed form an additional rationale for--the already existing \*256 commitment of various space powers to establish lunar bases. As indicated earlier, lunar mining activities may be worth developing not only to extract He-3 from the regolith, but also to obtain a variety of other byproducts highly useful for the support of lunar bases.35 Finally, the economic viability of He-3-based fusion power will, of course, depend on its eventual production cost relative to alternative sources of energy such as fossil fuel or other conventional sources of energy, energy produced by nuclear fission reactors, or other forms of fusion energy--all figures difficult to accurately predict at this time. Proponents of He-3-based fusion energy argue that, notwithstanding the substantial costs involved in developing He-3 fusion reactors, establishing a lunar mining operation, and transporting He-3 back to Earth, He-3-based fusion power will eventually be more than competitive with the cost of other types of energy resources and provide more than sufficient incentive for the participation of both government and private enterprise.36 But other \*257 commentators are more skeptical, doubting both the technical feasibility of such a complex and challenging development and the likelihood of He-3-based fusion power ever competing successfully with more traditional Earth-based energy systems.37 Suffice it to say, major space powers currently consider the potential of He-3-based fusion energy sufficiently promising as to warrant their serious interest and to furnish at least an additional rationale for their commitment to programs to establish national stations on the Moon.

#### That dominance emboldens China to seize Taiwan

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Michael Schuman Michael Schuman is the author of Superpower Interrupted: The Chinese History of the World and The Miracle: The Epic Story of Asia’s Quest for Wealth. What Happens When China Leads the World The Atlantic, October 5, 2020 <https://www.theatlantic.com/international/archive/2020/10/what-kind-superpower-will-china-be/616580/> -CAT

What kind of superpower will China be? That’s the question of the 21st century. According to American leaders such as Secretary of State Mike Pompeo, China will be a rapacious authoritarian nightmare, intent on destroying democracy itself. Beijing, needless to say, doesn’t quite agree. Fortunately for those of us seeking answers to this question, China was a major power for long stretches of history, and the foreign policies and practices of its great dynasties can offer us insights into how modern Chinese leaders may wield their widening power now and in the future. Of course, Chinese society today is not the same as it was 100 years ago—let alone 1,000 years. But I’ve long been studying imperial China’s foreign relations, and clear patterns of a consistent worldview emerge that are likely to shape Beijing’s perceptions and projection of power in the modern world. China will not be a pacifist power In an address to the United Nations General Assembly in September, Chinese President Xi Jinping repeated Beijing’s oft-stated claim that it was committed to peaceful development, and there is a widely held view that Chinese emperors of the past generally eschewed the use of force. It is certainly true that the country’s dynasties enjoyed stable relations with some of their East Asian neighbors for extended periods of time—unlike in Europe, where competing monarchies were almost constantly at each other’s throats. Modern Chinese like to contrast brutal European colonial adventures with the 15th-century voyages of Chinese Admiral Zheng He and his treasure fleets, which sailed across the Indian Ocean but conquered no one. But this quaint picture of Chinese pacifism ignores that the country’s dynasties were almost constantly at war. Sure, many of these wars were defensive, mainly against a panoply of invading northern tribesmen. But at the height of their power, the emperors were quite aggressive expansionists, too. The Han dynasty (206 B.C.–220 A.D.) and the Tang dynasty (618–907) had armies marching from Central Asia to the Korean peninsula. The Song dynasty (960–1279) fought wars with and sought territory from rival states; it just wasn’t very good at it. The most acquisitive of the dynasties was the Qing (1644–1912), which carved up and controlled Tibet and conquered today’s Xinjiang. The Qing emperors were Manchu, a northern people, but lands they acquired are now considered indisputable parts of the motherland. (Mao Zedong’s People’s Liberation Army had to reclaim Tibet, which had drifted away from China amid the chaos of the Qing collapse, while the Xinjiang region, which had attained a high degree of autonomy, had to be reintegrated as well.) China will insist on its own world order The states China didn’t or couldn’t overrun were absorbed into the Chinese world through a system of diplomacy and trade that the emperors controlled. Other governments were expected to pay tribute to the Chinese court as an acknowledgment of Chinese superiority, at least ceremonially, and the emperors then considered them vassals. Whether such a tribute system really existed as a hard-and-fast or consistently applied foreign policy is debated among historians. But it is clear that the Chinese usually tried to foist their diplomatic norms and practices onto those who desired formal relations with China. Think of it as the rules of the game of foreign affairs in East Asia, dictated by China. This order was rarely challenged, at least by the more established East Asian states. Unlike Europe, where states of roughly similar muscle contended for territory, trade, and influence, China had no real rivals. Generally speaking, its neighbors accepted Chinese dominance and followed its rules of engagement. When China faced a challenge, however, it could resort to force. The short-lived Sui dynasty (581–618) and the Tang spent decades, for example, trying to destroy the strong Koguryo kingdom in Korea. Zheng He, the supposedly peaceful admiral, launched a military expedition on the island of Sumatra (now part of Indonesia) against a rival to the local king and Chinese vassal. When the Japanese invaded the Korean peninsula in 1592, the Ming dynasty (1368–1644) sent troops to help the Koreans expel them. As late as the 1880s, the Qing dynasty went to war to aid its Vietnamese tributaries against the French. The Chinese would also police their system in other, coercive ways—by, for instance, denying proper trading rights to unruly foreigners. So while Xi told the UN in September that Beijing “will never seek hegemony, expansion, or sphere of influence,” history suggests that China will use force or coercion against other countries when they contest Chinese power. This has implications for Vietnam and other Southeast Asian countries that dispute China’s claim to nearly all of the South China Sea, and for Taiwan, which Beijing sees as a renegade province. There are also signs that the Chinese will restore aspects of the old imperial order as their power expands. On two occasions, Xi has summoned high-level delegations from countries participating in his infrastructure-building Belt and Road Initiative to pomp-heavy Beijing forums—tribute missions in all but name. Conversely, when countries defy Beijing’s edicts, they are denied access to its bounty. China blocked imports from Canada and Australia amid recent diplomatic tussles, and Beijing targeted South Korean businesses in China three years ago after Seoul agreed to deploy a U.S. missile defense system that the Chinese saw as a security threat. Chinese police officers watch a cargo ship at a port in Qingdao in China's eastern Shandong province. (AFP / Getty) China will export its values One reason supporting the notion that China will be a benign superpower is the amorality of its current foreign policy. Unlike the U.S., with its missionary zeal to bring its form of liberty to all, China doesn’t seem as interested in changing the world, this argument goes, just making money from it. There is some truth to this. The Chinese are equally happy to sell Huawei 5G networks to autocratic Russia and democratic Germany without a fuss. Historically, though, the Chinese believed that their culture had a transformative power—it could change barbarism into civilization. Confucius himself thought so. In the Analects, China’s greatest sage expressed a desire to live among barbarian tribes. A startled listener asked how he could tolerate their uncouth habits. Not to worry, Confucius answered. “If a superior man dwelt among them, what rudeness would there be?” Practically speaking, China’s historic statesmen didn’t really expect the world to “go Chinese,” but they did promote their civilization. Ceremonies for visiting ambassadors at the imperial court were designed to awe. Tang officials built dormitories for foreign students who wanted to study Chinese literature at the country’s famous academies. The voyages of Zheng He were meant most of all to display Chinese greatness: The Ming emperor who launched them, Yongle, imagined that the people of Cochin in southern India “went down on their hands and knees,” and, “looking to Heaven, they bowed and all said: ‘How fortunate we are that the civilizing influences of the Chinese sages should reach us.’” The Chinese also understood the link between culture and power. Other peoples naturally looked to China, the most advanced society in East Asia, when building their own kingdoms, and they liberally borrowed legal codes and governing institutions, artistic and literary styles, and, most famously, Chinese written characters. This common cultural bond sustained Chinese influence in the region even when the country itself was politically weakened. Xi knows this full well, and he intends to build up China’s soft power by pushing Chinese values, both old and new. “Facts prove that our path and system … are successful,” he once said. “We should popularize our cultural spirit across countries as well as across time and space, with contemporary values and the eternal charm of Chinese culture.” This is the purpose of Confucius Institutes, a state-run program aimed at promoting Chinese language and culture. In the wake of Beijing’s (supposedly) superior coronavirus-busting effort, Chinese officials and state media outlets have been relentlessly marketing their (authoritarian) governance system as superior, while denigrating the (democratic) U.S. by mocking its pandemic response. The implication of this is that modern China will prefer other countries to be more like them, not unlike the emperors of old. In imperial times, China’s rulers tended to favor foreigners who were “more Chinese.” In the first century A.D., the Chinese historian Ban Gu developed the concept of an “inner” world—comprised of societies touched by Chinese civilization—and an “outer,” of incorrigible barbarians who remained blind to China’s light. The inner crowd was treated more benignly and participated more closely in Chinese affairs. This suggests that ultimately China will support like-minded (read: authoritarian) regimes. Indeed, it already does: It befriends illiberal governments shunned by most other countries, such as North Korea, Iran, Belarus, and Venezuela. China only tolerates relationships it can dominate Even in deep antiquity, the Chinese considered themselves better than other peoples because they believed that their civilization was civilization. This formed the basis of a worldview in which the Chinese sat atop the hierarchy. They did not believe in equal relationships, at least in official or ideological terms. Their world order, with its rules and norms, was based on the principle of Chinese superiority, and the acceptance of that superiority by all others. Traditionally, when the Chinese were forced into a subordinate or even an equal position with another power, usually due to military weakness, they resented it and tried to reassert their usual dominance when they were strong enough to turn the tables. And it is happening again today. Seething at what they consider humiliations inflicted by Western powers—from the Opium War to what the Chinese call “unequal” treaties that sapped their sovereignty—China is on a mission to regain the upper hand. As Xi put it, the country “will never again tolerate being bullied by any nation.” That’s the goal behind much of his current policies, from a significant buildup of military capabilities to state-funded programs aimed at helping China overtake the West in technology. More and more, China’s diplomacy turns threatening when faced with challenges from other countries, whether the U.S., India, or Australia. What becomes clear from an examination of China’s history is that the Chinese don’t just want to be a great power—they believe they deserve to be. In centuries past, the Chinese thought their sovereign had a right to rule “all under Heaven.” Due to the realities of technology and distance, China’s reach usually remained regional. But now, in the age of globalization, Beijing’s influence may achieve that lofty goal.

#### The US will use nuclear first strikes to defend Taiwan

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Ben Westcott, CNN reporter, US military considered using nuclear weapons against China in 1958 Taiwan Strait crisis, leaked documents show, May 24, 2021. <https://www.cnn.com/2021/05/24/china/us-china-taiwan-1958-nuclear-intl-hnk/index.html> -CAT

Hong Kong (CNN)Military planners in Washington pushed for the White House to prepare plans to use nuclear weapons against mainland China during the Taiwan Strait crisis in 1958, newly leaked documents appear to confirm. The documents, first reported on by the New York Times Saturday, reveal the extent of Washington's discussions about using nuclear weapons to deter a Chinese invasion of Taiwan, including the acceptance by some US military leaders of possible retaliatory nuclear strikes on US bases. The new information was provided to the Times by Daniel Ellsberg, the whistleblower who in 1971 leaked the Pentagon Papers that detailed the US government's duplicity in its handling of the Vietnam War. "US first use of nuclear weapons should not be contemplated, prepared, or threatened anywhere, under any circumstances, including the defense of Taiwan," Ellsberg said in a post to his Twitter on Sunday. The Taiwan leak comes from previously classified sections of a 1966 report by think tank Rand Corporation on the 1958 Taiwan Straits crisis, written by M. H. Halperin for the Office of the then-Assistant Secretary of Defense. After the Communist Party took power in mainland China in 1949, following a brutal civil war, the Nationalist government fled to Taiwan. But Beijing viewed the island as part of its territory, and the two sides clashed intermittently over the following decades. The closest the US and China came to armed conflict was during the Taiwan Strait crisis in 1958, when the People's Republic of China fired artillery at Taipei's outlying islands. Washington worried the shelling could be a precursor to a full invasion. Soldiers stack artillery shells at the seaport on Quemoy Island in 1958 around the time of the Taiwan Strait crisis. Soldiers stack artillery shells at the seaport on Quemoy Island in 1958 around the time of the Taiwan Strait crisis. The shelling focused on the Quemoy and Matsu island groups, which lie between Taiwan and mainland China and are described by Rand Corporation as "the first line of defense" for Taipei. Although it is already public knowledge that the Eisenhower administration debated whether to use nuclear weapons to deter China from attacking Taiwan, the documents appear to reveal the extent of the planning for the first time. According to the leaked documents, some US Defense and State department officials were concerned the loss of the outlying islands in 1958 could lead to a full "Chinese Communist takeover of Taiwan." In the event of an air and sea attack on the islands, US Air Force Gen. Nathan Twining said the US would have to use nuclear weapons against Chinese air force bases "to prevent a successful air interdiction campaign," beginning with "low-yield ten to fifteen kiloton nuclear weapons." If this didn't lead to a break in the assault from mainland China, "the United States ... would have no alternative but to conduct nuclear strikes deep into China as far north as Shanghai." According to the documents, the Chairman of the Joint Chiefs acknowledged this would "almost certainly" lead to nuclear retaliation against Taiwan and the US military base at Okinawa in Japan. "But he stressed that if national policy is to defend the offshore islands then the consequences had to be accepted," the document said. Given China had yet to develop its own nuclear capabilities, any nuclear retaliation would have come from the Soviet Union, possibly sparking an even more devastating global conflict. The report said it isn't clear where the nuclear retaliation would have originated. The document said the US Joint Chiefs, and Twining in particular, saw the use of atomic weapons as "inevitable." In one section, Gen. Laurence S. Kuter, the top Air Force commander for the Pacific, "flatly" states that any US air action against a Chinese attack on the outlying islands "had no chance of success unless atomic weapons were used from the outset." In the end, Eisenhower was hesitant to use nuclear weapons and pushed for the US troops to stick to conventional arms. Joshua Pollack, editor of the Nonproliferation Review, said on Twitter Sunday that the idea the US would have risked a nuclear exchange with the Soviet Union over islands with "no military value" was "jarring." "It's no surprise the White House said no," he said. A ceasefire was reached in the Taiwan Strait on October 6, 1958, although there have been ongoing tensions between Beijing and Taipei. In January 2019 speech, Chinese President Xi Jinping warned he would take "all means necessary" and not "renounce the use of force" to rejoin Taiwan to the Chinese mainland. Beijing claims full sovereignty over Taiwan, a democracy of almost 24 million people located off the southeastern coast of mainland China, even though the two sides have been governed separately for more than seven decades. With military tensions rising again between the US and China, whistleblower Ellsberg said in his interview with the Times that he had supplied the documents due to his concerns over the possibility of a new war over Taiwan. On Sunday, Ellsberg took to Twitter to call for both sides to exercise restraint. "Note to @JoeBiden: learn from this secret history, and don't repeat this insanity," he said.

#### That escalates to total nuclear war

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Sam Ratner, Analysis: Is a US-China nuclear conflict likely? The World December 12, 2019 · 12:15 PM EST Sam Ratner writes Inkstick Media's Critical State newsletter. He is also a contributing editor Zitamar News and graduate a of Columbia University's School of International and Public Affairs. Sam writes about civil wars, statebuilding, southern Africa and progressive security policy. <https://www.pri.org/stories/2019-12-12/analysis-us-china-nuclear-conflict-likely> -CAT

Studying nuclear confrontations is a strange job. On one hand, it’s very difficult. Crises that could plausibly lead to nuclear weapons use are rare, which means there aren’t that many cases to study. When it comes to the nightmare scenario of two nuclear powers becoming embroiled in an escalatory spiral resulting in mutual, increasingly destructive nuclear strikes, the historical record is bare. The only time any country has launched a nuclear attack — the United States attacking Japan in 1945 — it did so with the impunity that came with knowing it was the only nuclear power on earth. It’s hard to draw conclusions about the likelihood of something that’s never happened. On the other hand, there are ways in which it’s quite straightforward. Control over how nuclear crises play out is shared by a very small group of people around the world. There are only a few countries that have nuclear weapons, and within those countries only a few people with meaningful power over whether and how nuclear arsenals are deployed, which means it’s relatively easy to know who you’re actually studying. Not only that, but to the extent that those people desire stability in their relationships with nuclear decision makers in other countries, they have an interest in speaking publicly about their approach to potential nuclear crises. When people are eager to tell you about their decision-making processes, you can learn a lot. Related: As landmark nuclear treaty fades, its Cold War authors ask ‘What next?’ In an article published in the latest edition of International Security, political scientists Fiona Cunningham and M. Taylor Fravel dug into how the Chinese government thinks about potential nuclear confrontations. They spoke to 24 members of China’s nuclear strategy community and read a range of official and unofficial documents to understand how likely Chinese strategists think it is that a conventional war between China and the US will escalate into a nuclear war. The message from Chinese experts was clear: They don’t think it’s very likely at all. Their confidence comes from their belief that limited nuclear war is basically impossible. Once one country uses one nuclear weapon, no matter the circumstance, the mainline Chinese view is that both countries will have strong incentives to escalate quickly, to avoid being caught in a position where their strategic nuclear arsenals would be destroyed. That quick escalation would mean mass destruction on both sides, making any nuclear use unlikely. Buttressing that belief is a confidence in both China and America’s ability to manage escalation of conventional conflicts, to ensure they don’t produce a move to nuclear strikes. Even in instances where nuclear powers have lost conventional wars, Chinese General Pan Zhenqiang wrote, “they still do not dare to use nuclear weapons to reverse a [losing] war situation.” If both sides believe that any nuclear escalation would be extremely dangerous, the mainline Chinese view is that both sides have every reason to seek deescalation in even the most dire conventional conflict situations. That all seems like good news for the future of US-China strategic competition. If the Chinese government isn’t concerned that the US is about to nuke China, then it probably won’t pursue the kinds of dangerous nuclear expansion policies that would protect China’s second strike capability from an American first strike. However, Cunningham and Fravel argue, the news isn’t all rosy. Though Chinese views reflect an instinct for safety in a potential nuclear crisis, many American policymakers don’t share those views. Instead, American nuclear doctrine assumes that nuclear escalation can be controlled, and that smaller, “tactical” nuclear strikes might not inherently result in massive “strategic” retaliation. That asymmetry is dangerous. If the US launches a tactical nuclear strike under the belief that China will respond in kind, but China sees that strike as tantamount to all-out nuclear war, American policymakers are going to spend the last moments before a massive nuclear conflagration looking extremely stupid.

#### That’s a significantly more plausible extinction scenario – o/ws the 1AC on probability and timeframe – hijacks Johnson 13.