### 1

#### I: Affirmatives can only defend whether exclusive possession is unjust.

* The definition is from Black’s Law Dictionary

Su 17 [Jinyuan Su, Professor and Assistant Dean at Xi'an Jiaotong University School of Law, China, “Legality of unilateral exploitation of space resources under international law,” 2017, *International & Comparative Law Quarterly*, Vol. 66, Issue 4, pp. 991-1008, https://doi.org/10.1017/S0020589317000367, EA]

The Outer Space Treaty does not prohibit expressis verbis the extraction of space resources. However, there exists a possibility that the recognition of property rights by a State, which is a party to the Outer Space Treaty, over resources extracted in outer space may conflict with its international obligations under Article II of the treaty, which proscribes the national appropriation of outer space 'by claim of sovereignty, by means of use or occupation, or by any other means'.26 The term 'appropriation' means '[t]he exercise of control over property; a taking of possession'.27

#### V1: They implement a plan which doesn’t defend why appropriation is unjust

V2: They implement the Artemis accords which is Extra T since its not defending the justness of appropriation.

#### Negate –

#### 1 – Extra T – going beyond the resolution makes it impossible to determine if the resolutional part of their action was justifiable – means they haven’t affirmed. Independently justifies adding planks to the aff to spike our best neg ground and solvency deficits.

#### 2 – Limits – opening the topic up to restricting any regulatory program lets them spec any random organization that may be still in development programs – moots the core question of whether private space property is just and spikes any possible generic deficits on the topic.

#### Drop the debater – abusive advocacies skew substance – 1AR restart doesn’t check 1NC construction.

#### Competing interps – offense proves they’re not reasonable and anything else encourages arbitrary judge intervention.

#### No RVIs – leads to baiting T and chilling checks on abusive AFFs – causes substance crowdout.

### 2

#### I: Appropriation means controlling property rights in the context of space law.

* The definition is from Black’s Law Dictionary

Su 17 [Jinyuan Su, Professor and Assistant Dean at Xi'an Jiaotong University School of Law, China, “Legality of unilateral exploitation of space resources under international law,” 2017, *International & Comparative Law Quarterly*, Vol. 66, Issue 4, pp. 991-1008, https://doi.org/10.1017/S0020589317000367, EA]

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Prefer our definition on specificity to space law

#### V: Aff doesn’t prevent this – even with Artemis accords regulating, they don’t prevent private property rights

#### Vote neg –

#### 1 – Limits – they allow banning practices that don’t constitute taking property rights, but do preclude other actors from using the same space – opens the door to almost any practices like mining because those stop other actors from doing the same thing.

#### 2 – Ground – basing appropriation off use instead of ownership kills our DA links based off property rights – think mining good and other private sector good turns. Key on a topic with zero neg generics.

#### Drop the debater – abusive advocacies skew substance – 1AR restart doesn’t check 1NC construction.

#### Competing interps – offense proves they’re not reasonable and anything else encourages arbitrary judge intervention.

#### No RVIs – leads to baiting T and chilling checks on abusive AFFs – causes substance crowdout.

### 3

#### LEO is uniquely accessible to African industry due to cheaper launch and production costs – that solves Earth Observation, internet, national security, and spills over to enrich the economy

Samanga 21 Ruvimbo Samanga, Zimbabwean scholar and lawyer working with the Space Law & Policy, holds a BA Law (cum laude), an LLB and an LLM in International Trade and Investment Law from the University of Pretoria. "Why Africa Should Expand its Mega-Satellite Constellation Capacity." Space Legal Issues, 3 May. 2021, www.spacelegalissues.com/why-africa-should-expand-its-mega-satellite-constellation-capacity.

Since 1988, Africa has spent approx. USD$4 billion towards the launch of 41 satellites (excluding the cost of the RASCOM-QAF 1R replacement). 30 of these satellites fall into the Small Satellite market. The majority of satellites owned by African institutions typically involves satellites with less than 600kgs in fueled mass and 24 of these satellites have less than 200kg fueled mass. The reason for the interest in the miniaturized satellites? In a nutshell, they offer cheaper design alternatives, coupled with the ease of mass production. They are also significantly more versatile in certain applications, owing to their reduced size. For example, they are the satellite of choice for low data rate communications, being launched in large multi-coverage constellations in Low Earth Orbit (LEO). It comes as no surprise then that small satellites are growing increasingly popular amongst developing countries, no less within the region, for the accessibility. The growth of the small satellite industry is evident in commercial as well as large programs which exhibit steady growth. In 2019, 5 African countries launched 8 satellites, 6 of which were small satellites. It is expected that by the year 2024, 19 African countries would have launched additional satellites into space. These small, sometimes called nano-satellites, are really driving the African space program, especially in line with the African Union’s (AU) science and technology ambitions which are expected to reap huge benefits for the continent. Most importantly through the AU Science, Technology and Innovation Science Strategy for Africa – 2024 (STISA-2024). Small satellites are categorized as space systems of up to 600 kg (falling into the categories of Minisatellites, Microsatellite, Nanosatellite, Picosatellite, and Femto Satellites). They range across different applications (Satellite Communications, Imaging & Earth Observations, Space Situational Awareness, and Technology Development), and have different end users (Government & Defense, and Civil & Commercial). Of the 8 satellites launched in 2019, 6 were small satellites (3 Nanosatellites, 2 Microsatellites, and 1 Picosatellite). Satellite communications mega-constellations are on the rise, however this growing interest is not without its challenges and uncertainties. The biggest risks in the small sat interest in the coming years are mostly ascribed to investor’s rick assessment & funding availability; Securing customers & Return on Investment (ROI); Stronger regulations; Competition from heavier satellite, and reliability. This is also further compounded by the fact that establishing a satellite service industry which is sustainable requires adequate funding. Skillset deficit is also a prominent challenge. Even though Africa has and will in future have the largest population of young people, the youth are generally not interested in pursuing careers in STEM (science, technology, engineering and mathematics). You can expect more satellites to be launched despite these crises. As regards the African Small Sat market, the growth perspectives seem to point towards predominant university projects which demonstrates a capacity to operate Smallsats, also attesting to the affordability of the systems. This is also a sign of government effort to support the growth of this industry, and the contributions of the youth in satellite development. Indeed the manufacturing ability is extremely important, but also the service capability and development prospects. Despite these positive steps there is still quite a need for funding in this area. Of the overall revenue and results, Earth Observation is the most predominant small sat use, however it is expected in the next few years this may shift to internet broadband, but ultimately, creating value for users and enabling services that drive industry development will be the ultimate determining factor. Internet coverage allows people to create capacity and this might undoubtedly be Africa’s most prolific use of small satellite solutions. CubeSats which are around 50 kg, are the most popular and are only getting bigger because of the interest for carrying larger payloads. But in future it may become less stringent to use the restricted platform, but the threshold is bound to switch to a smaller regular platform. These services are enabled through satellite mega-constellations. Satellite mega-constellations operate in the Lower Earth Orbit which is described as the orbit located no more than 2,000 kilometers from the Earth’s surface. There is room for LEO regarding low-latency connectivity. But this does not mean that the Geostationary Orbit will become redundant, rather, and on the other hand GEO will remain an asset for broadband, because of its efficiency and coverage as well as less-sophisticated ground segments. Nevertheless, the LEO offers the most advantageous orbital resource to come and deserves much policy intervention to regulate, owing to the fact that it is a finite, scare resource. At the end of the day, whether Smallsats are launched in a constellation or as individual space systems, they offer a cost-effective alternative to traditional space objects, and would allow Africa the opportunity to release its potential in various areas of interest including but not limited to communications, global positioning and navigation, and Earth observation. Africa would be enriched by the ability to use this new technology to enable users through diverse services, to protect assets within the value chain, or simply to monitor areas of national security such as the environment and borders. These are all aspects which will have a substantial developmental impact in the African economy, and is well aligned to the African space policy which speaks towards increase of space and satellite capacity in an affordable and beneficial manner.

#### LEO Earth Science Observation Satellites uniquely solve a host of environmental threats – pollution, climate change, biod, defo, soil erosion

Ustin and Middleton 20 Ustin, S.L. [John Muir Institute of the Environment, University of California, Davis] , Middleton, E.M [NASA/Goddard Space Flight Center (Emerita)]. Current and near-term advances in Earth observation for ecological applications. Ecol Process 10, 1 (2021). https://doi.org/10.1186/s13717-020-00255-4

There is an unprecedented array of new satellite technologies with capabilities for advancing our understanding of ecological processes and the changing composition of the Earth’s biosphere at scales from local plots to the whole planet. We identified 48 instruments and 13 platforms with multiple instruments that are of broad interest to the environmental sciences that either collected data in the 2000s, were recently launched, or are planned for launch in this decade. We have restricted our review to instruments that primarily observe terrestrial landscapes or coastal margins and are available under free and open data policies. We focused on imagers that passively measure wavelengths in the reflected solar and emitted thermal spectrum. The suite of instruments we describe measure land surface characteristics, including land cover, but provide a more detailed monitoring of ecosystems, plant communities, and even some species then possible from historic sensors. The newer instruments have potential to greatly improve our understanding of ecosystem functional relationships among plant traits like leaf mass area (LMA), total nitrogen content, and leaf area index (LAI). They provide new information on physiological processes related to photosynthesis, transpiration and respiration, and stress detection, including capabilities to measure key plant and soil biophysical properties. These include canopy and soil temperature and emissivity, chlorophyll fluorescence, and biogeochemical contents like photosynthetic pigments (e.g., chlorophylls, carotenoids, and phycobiliproteins from cyanobacteria), water, cellulose, lignin, and nitrogen in foliar proteins. These data will enable us to quantify and characterize various soil properties such as iron content, several types of soil clays, organic matter, and other components. Most of these satellites are in low Earth orbit (LEO), but we include a few in geostationary orbit (GEO) because of their potential to measure plant physiological traits over diurnal periods, improving estimates of water and carbon budgets. We also include a few spaceborne active LiDAR and radar imagers designed for quantifying surface topography, changes in surface structure, and 3-dimensional canopy properties such as height, area, vertical profiles, and gap structure. We provide a description of each instrument and tables to summarize their characteristics. Lastly, we suggest instrument synergies that are likely to yield improved results when data are combined. Background Many environmental scientists have concluded that the Earth is at or near one or more perilous climate tipping points (Krieger et al. 2009; Lenton, 2011, Lenton and Williams 2013; Brook et al. 2013; Hickman et al., 2019). Climate change interacts with and exacerbates many other environmental and societal problems. These include air and water pollution that compound health issues (Harlan and Ruddell 2011; Kan et al. 2012), especially in poor communities (Schlosberg and Colins 2014; Hallegatte and Rozenberg 2017), widespread and/or frequent droughts linked to extensive fires (Amiro et al. 2001; Littell et al. 2016), diminished resources for drinking water and irrigation (Jackson et al. 2001; Oki and Kanae 2006), and large-scale biodiversity losses (Lindenmayer and Likens 2011; Pires et al. 2018) , including species extinctions (Cahill et al. 2013). Related factors include deforestation (Green and Sussman 1990) and soil erosion (Hill et al., 2009, consequences of over-exploitation of resources (Giri et al. 2007) due to massive global conversion of natural resources for human uses (Seto et al. 2002. Documentation of all of these problems and many others are of interest to the broader ecological community at scales from local to global. This can only realistically be accomplished with satellite observations in combination with process and statistical models to reveal patterns and trends that enlighten understanding about how current conditions have developed from past environmental drivers in order to predict future conditions.

#### Warming causes extinction

David **Spratt 19**, Research Director for Breakthrough National Centre for Climate Restoration, Ian Dunlop, member of the Club of Rome, formerly an international oil, gas and coal industry executive, chairman of the Australian Coal Association, May 2019, “Existential climate-related security risk: A scenario approach,” https://docs.wixstatic.com/ugd/148cb0\_b2c0c79dc4344b279bcf2365336ff23b.pdf

An existential risk to civilisation is one posing **permanent large negative consequences** to humanity which may never be undone, either **annihilating intelligent life** or permanently and drastically curtailing its potential.

With the commitments by nations to the 2015 **Paris** Agreement, the current path of warming is 3°C or more by 2100. But this figure does not include “long-term” **carbon-cycle feedbacks**, which are materially relevant now and in the near future due to the **unprecedented** **rate** at which human activity is perturbing the climate system. Taking these into account, the Paris path would lead to around 5°C of warming by 2100.

Scientists warn that warming of 4°C is incompatible with an organised global community, is **devastating** to the **majority of** **ecosystems**, and has a **high probability** of not being stable. The World Bank says it may be “**beyond adaptation**”. But an existential threat may also exist for many peoples and regions at a significantly lower level of warming. In 2017, 3°C of warming was categorised as “catastrophic” with a warning that, on a path of unchecked emissions, low-probability, high-impact warming could be catastrophic by 2050.

The Emeritus Director of the Potsdam Institute, Prof. Hans Joachim Schellnhuber, warns that “climate change is now reaching the **end-game**, where very soon humanity must choose between **taking** **unprecedented action**, or accepting that it has been left too late and **bear** **the consequences**.” He says that if we continue down the present path “there is a very big risk that we will just **end** **our** **civilisation**. The human species will survive somehow but we will destroy almost everything we have built up over the last two thousand years.”11

Unfortunately, conventional risk and probability analysis becomes useless in these circumstances because it excludes the full implications of outlier events and possibilities lurking at the fringes.12

Prudent risk-management means a tough, objective look at the real risks to which we are exposed, especially at those **“fat-tail” events**, which may have consequences that are damaging beyond quantification, and **threaten** **the** **survival** **of human** **civilisation**.

Global warming projections display a “fat-tailed” distribution with a **greater likelihood** of warming that is well in **excess of** **the** **average amount** **of warming** **predicted by** **climate** **models**, and are of a higher probability than would be expected under typical statistical assumptions. More importantly, the risk lies disproportionately in the “fat-tail” outcomes, as illustrated in Figure 1.

### 4

#### Text: States except for Africa ought to prohibit the appropriation of Low Earth Orbit by private entities

#### Solves the net benefits of the plan because they don’t specify that African satellites are bad

#### Solves net benefit of the disad too

### 5

#### US wins space race now due to private competition – its key to space dominance.

Weichert 21 – former Congressional staff member who holds a Master of Arts in Statecraft & National Security Affairs from the Institute of World Politics in Washington, D.C. He is the founder of The Weichert Report: An Online Journal of Geopolitics [Brandon, “The Future of Space Exploration Depends on the Private Sector,” 7/5/2021, https://www.nationalreview.com/2021/07/the-future-of-space-exploration-depends-on-the-private-sector/#slide-1]

As Jeff Bezos, the wealthiest man on the planet, readies to launch himself into space aboard one of his own rockets, the world is watching the birth of a new dawn in space. Previously, America relied on its government agency, NASA, to propel it to the cosmos during the last space race with the Soviet Union. Today, America’s greatest hopes are with its private sector.

Jeff Bezos is not engaging in such risky behavior simply because he’s an adrenaline junky. No, he’s launching himself into orbit because his Blue Origins is in a titanic struggle with Elon Musk’s SpaceX — and Bezos’s firm is losing.

Whatever happens, the American people will benefit from the competition that is shaping up between America’s space entrepreneurs. This has always been how innovation occurs: through the dynamic, often cutthroat competition between actors in the private sector. While money is their ultimate prize, fame and fortune are also alluring temptations to make men like Musk and Bezos risk much of their wealth to change the world.

The private space race among these entrepreneurs is part of a far more important marathon between Red China and the United States. Whichever nation wins the new space race will determine the future of the earth below.

Consider this: Since winning its initial contracts to launch sensitive U.S. military satellites into orbit, SpaceX has lowered the cost of military satellite launches on taxpayers by “over a million dollars less” than what bigger defense contractors can do. Elon Musk is convinced that he can bring these costs down even more, thanks to his reusable Falcon 9 rocket.

The competition between the private space start-ups is fierce — just as the competition between Edison and Westinghouse was — but the upshot is ultimately greater innovation and lower costs for you and me. In fact, Elon Musk insists that if NASA gives SpaceX the contract for building the Human Landing System for the Artemis mission, NASA would return astronauts to the lunar surface by 2024 — four years before NASA believes it will do so. (Incidentally, 2024 is also when China anticipates having a functional base on the moon’s southern pole.)

Whereas China has an all-of-society approach to its space race with the United States, Washington has yet to fully galvanize the country in the way that John F. Kennedy rallied America to wage — and win — the space race in the Cold War. America’s private sector, therefore, is the silver bullet against China’s quest for total space dominance. If left unrestricted by meddlesome Washington bureaucrats, these companies will ensure that the United States retains its overall competitive advantage over China — and all other challengers, for that matter.

Indeed, the next four years could prove decisive in who will be victorious.

Enter the newly minted NASA director, Bill Nelson, whose station at the agency has effectively poured cold water on the private sector’s ambitious space plans. “Space is not going to be the Wild West for billionaires or anyone else looking to blast off,” Nelson admonished an inquiring reporter.

Why not?

America’s actions during its western expansion created a dynamic and advanced nation that was well-positioned to dominate the world for the next century. Should we not attempt to emulate this in order to remain dominant in the next century?

More important, this is precisely how China treats space: as a new Wild West . . . but one in which Beijing’s forces will dominate. China takes a leap-without-looking approach to space development — everything that can be done to further its grand ambition of becoming the world’s most dominant power by 2049 will be done. Meanwhile, the Biden administration wants to prevent America’s greatest strength, the free market, from helping to beat its foremost geopolitical competitor.

Nelson’s comments are fundamentally at odds with America’s spirit and animating principles. Whatever one’s opinion about Bezos or Musk, the fact is that their private space companies are inspiring greater innovation today in the space sector after years of its being left in the sclerotic hands of the U.S. government.

Sensing that the federal government’s dominance of U.S. space policy is waning, the Biden administration would rather cede the strategic high ground of space to China than let wildcatting innovators do the hard work. Today, the Federal Aviation Authority (FAA) and NASA are contriving new ways for strangling the budding private space sector, just as it is taking flight.

Risk aversion is not how one innovates. Risk is what led Americans to the moon just 66 years after the Wright brothers flew their first airplane. A willingness for risk doesn’t exist today in the federal government — which is why the feds shouldn’t be running space policy.

The U.S. government should be partnering with the new space start-ups, not shunning them. The FAA should be automatically approving SpaceX launches, not stymying them. The federal government will not win space any more than it could win the West or build the locomotive. It takes strong-willed, brilliant individuals of a rare caliber to do that. All government can do is to give the resources and support to private-sector innovators and let them make history for us.

The next decade will decide who wins space. Let it be America — and let America’s dynamic start-ups win that race, not China’s state capitalism.

#### Space deterrence solves nuclear war.

Parker 17 [Clifton B. Parker, Center for International Security and Cooperation; citing Air Force Gen. John Hyten, commander of the U.S. Strategic Command, “Deterrence in space key to U.S. security,” 01/24/17, *U.S. Strategic Command*, https://www.stratcom.mil/Media/News/News-Article-View/Article/1059106/deterrence-in-space-key-to-us-security/, EA]

Space is more important than ever for the national security of the United States, but it’s almost like the Wild West in terms of behavior, a top general said today.

Air Force Gen. John Hyten, commander of the U.S. Strategic Command, spoke Jan. 24 at Stanford’s Center for International Security and Cooperation. His talk was titled, “U.S. Strategic Command Perspectives on Deterrence and Assurance.”

Hyten said, “Space is fundamental to every single military operation that occurs on the planet today.” He added that “there is no such thing as a war in space,” because it would affect all realms of human existence, due to the satellite systems. Hyten advocates “strategic deterrence” and “norms of behavior” across space as well as land, water and cyberspace.

Otherwise, rivals like China and Russia will only threaten U.S. interests in space and create havoc for humanity below, he said.

Hyten also addressed other topics, including recent proposals by some to upgrade the country’s missile defense systems.

“You just don’t snap your fingers and build a state of the art anything overnight,” Hyten said, adding that he has not yet spoken to Trump administration officials about the issue. “We need a powerful military,” but a severe budget crunch makes “reasonable solutions” more likely than expensive and unrealistic ones.

On the upgrade front, Hyten said he favors a long-range strike missile system to replace existing cruise missiles; a better air-to-air missile for the Air Force; and an improved missile defense ground base interceptor.

‘Critically dependent’

From satellites to global-positioning systems (GPS), space has transformed human life – and the military – in the 21st century, Hyten said.

As the commander of the U.S. Strategic Command, Hyten oversees the global command and control of U.S. strategic forces, providing options for the president and secretary of defense. In particular, this command is charged with space operations (such as military satellites), information operations (such as information warfare), missile defense, global command and control, intelligence, surveillance, and reconnaissance, global strike and strategic deterrence (the U.S. nuclear arsenal), and combating weapons of mass destruction.

Hyten explained that every drone, fighter jet, bomber, ship and soldier is “critically dependent” on space to conduct their own operations. All cell phones use space, and the GPS command systems overall are managed at Strategic Command, he said.

“No soldier has to worry about what’s over the next hill,” he said, describing GPS capabilities, which have fundamentally transformed humanity’s way of life.

Space needs to be available for exploration, he said.

“I watch what goes on in space, and I worry about us destroying that environment for future generations.” He said that too many drifting objects and debris exist – about 22,000 right now. A recent Chinese satellite interception created a couple thousand more debris objects that now circle about the Earth at various altitudes and pose the risk of striking satellites.

“We track every object in space” now, Hyten said, urging “international norms of behavior in space.”

He added, “We have to deter bad behavior on space. We have to deter war in space. It’s bad for everybody. We could trash that forever.”

But now rivals like China and Russia are building weapons to deploy in the lower levels of space. “How do we prevent this? It’s bigger than a space problem,” he said.

Deterring conflict in the cyber, nuclear and space realms is the strategic deterrence goal of the 21st century, Hyten said.

“The best way to prevent war is to be prepared for war,” he said.

Hyten believes the U.S. needs a fundamentally different debate about deterrence. And it all starts with nuclear weapons.

“In my deepest heart, I wish I didn’t have to worry about nuclear weapons,” he said. Hyten described his job as “pretty sobering, it’s not easy.”

But he also noted the mass violence of the world prior to 1945 when the first atomic bomb was used. Roughly 80 million people died from 1939 to 1945 during World War II. Consider that in the 10-plus years of the Vietnam War, 58,000 Americans were killed. That’s equivalent to two days of deaths in WWII, he said.

In a world without nuclear weapons, a rise in conventional warfare would produce great numbers of mass casualties, Hyten said. About war, he said, “Once you see it up close, no human will ever want to experience it.”

Though America has “crazy enemies” right now, in many ways the world is more safe than during WWII, Hyten said. The irony is that nuclear weapons deterrence has kept us from thetype of mass killings known in events like WWII. But the U.S. must know how to use its nuclear deterrence effectively.

Looking ahead, Hyten said the U.S. needs to change and think about space as a potential war environment. An attack in space might not mean a response in space, but on the Earth.

### 6

#### States ought to call a global constitutional convention and establish a constitution reflecting intergenerational concern with exclusive authority to [plan] and bind participating bodies to its result.

#### The CP applies intergenerational equity to future generations – that’s better than trying to decide now whether the plan is beneficial across deep time – every country would say yes.

Tan 2k [David Tan, LL.M., Harvard Law School; LL.B. (Hons), B.Com., University of Melbourne. Former Tutor in Law, Trinity College, University of Melbourne, “Towards a New Regime for the Protection of Outer Space as the "Province of All Mankind",” 2000, *The Yale Journal of International Law*, Vol. 25, https://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=1114&context=yjil]

Edith Brown Weiss has advanced the theory of “intergenerational equity,” which provides for generational rights and obligations.158 Her thesis consists of a normative framework of intersecting theories of intergenerational and intragenerational equity that are derived from an underlying planetary trust, embodying the notion that generations act as stewards to sustain the welfare and well-being of all generations. This planetary trust obliges “each generation to preserve the diversity of the resource base and to pass the planet to future generations in no worse condition than it receives it.”159 The principle of the conservation of options requires each generation “to conserve the diversity of the natural and cultural resource base, so that it does not unduly restrict the options available to future generations in solving their problems and satisfying their own values, and should be entitled to diversity comparable to that enjoyed by previous generations.”\*60 The theory of intergenerational equity is an appealing one. Unfortunately, Weiss’s model generally rests upon an intertemporal human rights model for preserving the global environment. This presents many problems, ranging from the questionable existence of the right to a decent environment to the issue of remedies in respect of claims made by future generations against present generations.161

Whether the global awareness of the harm to our sense of intergenerational identity, as evidenced by the various U.N. General Assembly resolutions and numerous international conventions, will be sufficient to mobilize the implementation and enforcement of effective legal measures on behalf of future generations is doubtful. But more importantly, the notions of intergenerational identity and sustainable development will prove to be invaluable concepts in framing the discussion in Part VI.

Current literature has concentrated on the notion of sustainable development as involving the integration of economic and environmental considerations at all levels of decision-making.162 But the outer-space environment has been largely ignored, as if it were simply economic development on Earth that must be environmentally sound. There is no reason, however, why the precautionary principles that emerge from the concept of sustainable development in the Stockholm Declaration, the Rio Declaration, and the World Charter for Nature should not apply equally to the outer-space environment. Few states, if any, will take issue with the proposition that the exploration and use of outer space should be sustainable. It is in the common interest of all states, whether spacefaring or otherwise, to subscribe to a regime that allows for the development of space activities in a manner that leaves the space environment in a substantially unimpaired condition for future generations. One might even ultimately find that the uniqueness and vulnerability of the outer-space environment demand that the international community as a whole recognize sustainable development as a “global ethic”163 that transcends terrestrial boundaries, as a peremptory norm that prohibits “policies and practices that support current living standards by depleting the productive base, including natural resources, and that leaves future generations with poorer prospects and greater risks than our own.”164 We should not confine our actions to those we are now able to determine as directly or indirectly benefiting ourselves or our descendants. On the contrary, we should “cultivate our natural sense of obligation not to act wastefully or wantonly even when we cannot calculate how such acts would make any present or future persons worse off.”165 It seems impossible to find universally agreed-upon limits on the freedom of exploration and use of outer space. Rather than focus on indeterminate rules of custom-formation, we should concentrate on establishing fair and workable arrangements and institutions that can successfully accommodate the competing interests of all nations. With these guidelines in mind, we will now examine new methods of treaty-making that will enhance the willingness of states to participate in an environmental program that seeks to achieve an acceptable balance between pollution control and freedom of space exploration.

#### That solves the aff – it addresses shared anxieties while building political consensus.

Gardiner 14 1 [Stephen M. Gardiner, Professor of Philosophy and Ben Rabinowitz Endowed Professor of Human Dimensions of the Environment at the University of Washington, Seattle, “A Call for a Global Constitutional Convention Focused on Future Generations,” 2014, *Ethics & International Affairs*, Vol. 28, Issue 3, pp. 299-315, https://doi.org/10.1017/S0892679414000379, EA]

A Constitutional Convention

In my view, the above line of reasoning leads naturally to a more specific proposal: that we—concerned individuals, interested community groups, national governments, and transnational organizations—should initiate a call for a global constitutional convention focused on future generations. This proposal has two components. The first component is procedural. The proposal takes the form of a “call to action.” It is explicitly an attempt to engage a range of actors, based on a claim that they have or should take on a set of responsibilities, and a view about how to go about discharging those responsibilities. The second component is substantive. The main focus for action is a push for the creation of a constitutional convention at the global level, whose role is to pave the way for an overall constitutional system that appropriately embodies intergenerational concern.

The substantive idea rests on several key ideas. Still, for the purposes of a basic proposal, I suggest that these be understood in a relatively open way that, as far as is practicable, does not prejudge the outcome of the convention, and especially its main recommendations. First, the convention itself should be understood as “a representative body called together for some occasional or temporary purpose” and “constituted by statute to represent the people in their primary relations.”14 Second, a constitutional system should be thought of in a minimalist sense as “a set of norms (rules, principles or values) creating, structuring, and possibly defining the limits of government power or authority.”15 Third, the “instigating” role of the convention should be to discuss, develop, make recommendations toward, and set in motion a process for the establishment of a constitution. Fourth, its primary subject matter should be the need to adequately reflect and embody intergenerational concern, where this would include at least the protection of future generations, the promotion of their interests (where “interests” is to be broadly conceived so as to include rights, claims, welfare, and so on), and the discharging of duties with respect to them. It may also (and in my view should) include some way of reflecting concern for past generations, including responsiveness to at least certain of their interests and views. However, I will leave that issue aside in what follows.

The proposal to initiate a call for a global constitutional convention has at least two attractive features. First, it is based in a deep political reality, and does not underplay the challenge. It acknowledges the problem as it is, both specific and general, and calls attention to the heart of that problem, including to the failures of the current system, the need for an alternative, and the background issue of responsibility. Moreover, though the proposal is dramatic and rhetorically eye-catching, it is so in a way that is appropriately responsive to the seriousness of the issue at hand, the persistent political inertia surrounding more modest initiatives, and the fact that (grave though concerns about it are) climate change is only one instance of the tyranny of the contemporary (and the wider perfect moral storm), and we should expect others to arise over the coming decades and centuries.

The second attractive feature of the proposal is that, though ambitious, it is not alienating. While it does not succumb to despair in the face of the challenge, neither does it needlessly polarize and divide from the outset (for example, by leaping to specific recommendations about how to fill the institutional gap). Instead, it acknowledges that there are fundamental difficulties and anxieties, but uses them to start the right kind of debate, rather than to foreclose it. As a result, the proposal is a promising candidate to serve as the subject of a wide and overlapping political consensus, at least among those who share intergenerational concern.

Selective Mirroring

To quell some initial anxieties, it is perhaps worth clarifying the open-ended and non-alienating character of the proposal. One temptation would be to view the call for a global constitutional convention as a fairly naked plea for world government, a prospect that would be deeply alienating—indeed anathema—to many. However, that is not my intention. Though it is possible that a global constitutional convention would lead in this direction, it is by no means certain.

At a minimum, no such body could plausibly recommend any form of “world government” without simultaneously advancing detailed suggestions about how to avoid the standard threats such an institution might pose. Moreover, it seems perfectly conceivable, even likely under current ways of thinking, that a global constitutional convention would pursue what we might call a selective mirroring strategy. Specifically, a convention would seek to develop a broader system of institutions and practices that reflected the desirable features of a powerful and highly centralized global authority but neutralized the standing threats posed by it (for example, it might employ familiar strategies such as the separation of powers). In all likelihood, one feature of a selective mirroring approach would be the significant preservation of existing institutions to serve as a bulwark against the excesses of any newly created ones. Whether and how such a strategy might be made effective against the perfect moral storm, and whether something closer to a “world government” would do better, would be a central issue for discussion by the convention.

#### It spills over to foster broader intergenerational representation, but independence is key

Gardiner 14 2 [Stephen M. Gardiner, Professor of Philosophy and Ben Rabinowitz Endowed Professor of Human Dimensions of the Environment at the University of Washington, Seattle, “A Call for a Global Constitutional Convention Focused on Future Generations,” 2014, *Ethics & International Affairs*, Vol. 28, Issue 3, pp. 299-315, https://doi.org/10.1017/S0892679414000379, EA]

One set of guidelines concerns how the global constitutional convention relates to other institutions. The first guideline concerns relative independence:

(1) Autonomy: Any global constitutional convention should have considerable autonomy from other institutions, and especially from those dominated by factors that generate or facilitate the tyranny of the contemporary (and the perfect moral storm, more generally).

Thus, for example, attempts should be made to insulate the global constitutional convention from too much influence from short-term and narrowly economic forces.

The second guideline concerns limits to that independence:

(2) Mutual Accountability: Any global constitutional convention should be to some extent accountable to other major institutions, and they should be accountable to it.

Thus, for example, though the global constitutional convention should not be able to decide unilaterally that national institutions should be radically supplanted, nevertheless such institutions should not have a simple veto on the recommendations of the convention, including those that would result in sharp limits to their powers.

A third guideline concerns adequacy:

(3) Functional Adequacy: The global constitutional convention should be constructed in such a way that it is highly likely to produce recommendations that are functionally adequate to the task.

Thus, for example, the tasks of the global constitutional convention should not be assigned to any currently existing body whose design and authority is clearly unsuitable. In my view, this guideline rules out proposals such as the Royal Society’s suggestion that governance of geoengineering should be taken up by the United Nations’ Commission on Sustainable Development,20 or the Secretary-General’s recommendation of a new United Nations’ High Commissioner for Future Generations.21 Though such proposals may have merit for some purposes (for example, as pragmatic, incremental suggestions to highlight the importance of intergenerational issues), they are too modest, in my opinion, to reflect the gravity of the threats posed by climate change in particular, and the perfect moral storm more generally.

Aims

A second set of guidelines concerns the aims of the global constitutional convention. Here, the perfect moral storm analysis would suggest:

(4) Comprehensiveness: The convention should be under a mandate to consider a very broad range of global, intergenerational issues, to focus on such issues at a foundational level, and to recommend institutional reform accordingly.

(5) Standing Authority: Though the convention may recommend the establishment of some temporary and issue-specific bodies, its focus should be on the establishment of institutions with standing authority over the long term.

These guidelines are significant in that they stand against existing issue-specific approaches to global and intergenerational problems, and encourage not only a less ad hoc but also a more proactive approach. In particular, the global constitutional convention might be expected to recommend institutions that would be charged with identifying, monitoring, and taking charge of intergenerational issues as such. For example, such institutions should address not only specific policy issues (such as climate change, large asteroid detection, and long-term nuclear waste) but also the need to identify similar threats before they arise.

#### Proactive measures mitigate a laundry list of emerging catastrophic risks – extinction.

Beckstead 14 [Nick Beckstead, Nick Bostrom, Niel Bowerman, Owen Cotton-Barratt, William MacAskill, Seán Ó hÉigeartaigh, Toby Ord, \* Future of Humanity Institute, University of Oxford, \*\* Director, Future of Humanity Institute, University of Oxford, \*\*\* Global Priorities Project, Centre for Effective Altruism; Department of Physics, University of Oxford, \*\*\*\* Global Priorities Project, Centre for Effective Altruism; Future of Humanity Institute, University of Oxford, \*\*\*\*\* Uehiro Centre for Practical Ethics, University of Oxford, \*\*\*\*\*\* Cambridge Centre for the Study of Existential Risk; Future of Humanity Institute, University of Oxford, \*\*\*\*\*\*\* Programme on the Impacts of Future Technology, Oxford Martin School, University of Oxford, “Policy Brief: Unprecedented Technological Risks,” 2014, *The Global Priorities Project, The Future of Humanity Institute, The Oxford Martin Programme on the Impacts of Future Technology, and The Centre for the Study of Existential Risk*, https://www.fhi.ox.ac.uk/wp-content/uploads/Unprecedented-Technological-Risks.pdf, Accessed: 03/13/21, EA]

In the near future, major technological developments will give rise to new unprecedented risks. In particular, like nuclear technology, developments in synthetic biology, geoengineering, distributed manufacturing and artificial intelligence create risks of catastrophe on a global scale. These new technologies will have very large benefits to humankind. But, without proper regulation, they risk the creation of new weapons of mass destruction, the start of a new arms race, or catastrophe through accidental misuse. Some experts have suggested that these technologies are even more worrying than nuclear weapons, because they are more difficult to control. Whereas nuclear weapons require the rare and controllable resources of uranium-235 or plutonium-239, once these new technologies are developed, they will be very difficult to regulate and easily accessible to small countries or even terrorist groups.

Moreover, these risks are currently underregulated, for a number of reasons. Protection against such risks is a global public good and thus undersupplied by the market. Implementation often requires cooperation among many governments, which adds political complexity. Due to the unprecedented nature of the risks, there is little or no previous experience from which to draw lessons and form policy. And the beneficiaries of preventative policy include people who have no sway over current political processes — our children and grandchildren.

Given the unpredictable nature of technological progress, development of these technologies may be unexpectedly rapid. A political reaction to these technologies only when they are already on the brink of development may therefore be too late. We need to implement prudent and proactive policy measures in the near future, even if no such breakthroughs currently appear imminent

### Case

#### Mining impossible – gravity, power, cheaper methods.

Fickling 20 [David Fickling, Bloomberg Gadfly columnist covering commodities; has been a reporter for Bloomberg News, Dow Jones, the Wall Street Journal, the Financial Times and the Guardian, “We’re Never Going to Mine the Asteroid Belt,” 12/21/20, *Bloomberg Opinion*, https://www.bloomberg.com/opinion/articles/2020-12-21/space-mining-on-asteroids-is-never-going-to-happen, EA]

It’s wonderful that people are shooting for the stars — but those who declined to fund the expansive plans of the nascent space mining industry were right about the fundamentals. Space mining won’t get off the ground in any foreseeable future — and you only have to look at the history of civilization to see why.

One factor rules out most space mining at the outset: gravity. On one hand, it guarantees that most of the solar system’s best mineral resources are to be found under our feet. Earth is the largest rocky planet orbiting the sun. As a result, the cornucopia of minerals the globe attracted as it coalesced is as rich as will be found this side of Alpha Centauri.

Gravity poses a more technical problem, too. Escaping Earth’s gravitational field makes transporting the volumes of material needed in a mining operation hugely expensive. On Falcon Heavy, the large rocket being developed by Elon Musk’s SpaceX, transporting a payload to the orbit of Mars comes to as little as $5,357 per kilogram — a drastic reduction in normal launch costs. Still, at those prices just lofting a single half-ton drilling rig to the asteroid belt would use up the annual exploration budget of a small mining company.

Power is another issue. The international space station, with 35,000 square feet of solar arrays, generates up to 120 kilowatts of electricity. That drill would need a similar-sized power plant — and most mining companies operate multiple rigs at a time. Power demands rise drastically once you move from exploration drilling to mining and processing. Bringing material back to Earth would raise the costs even more. Japan’s Hayabusa2 satellite spent six years and 16.4 billion yen ($157 million) recovering a single gram of material from the asteroid Ryugu and returning it to Earth earlier this month.

What might you want to mine from space? Water is an essential component of most earth-bound mining operations and a potential raw material for hydrogen-oxygen fuel that could be used in space. The discovery in October of ice molecules in craters on the Moon was taken as a major breakthrough. Still, the concentrations of 100 to 412 parts per million are extraordinarily low by terrestrial standards. Copper, which typically costs about $4,500 per metric ton to refine, has an average ore grade of about 6,000 ppm.

The more promising commodities are platinum, palladium, gold and a handful of rare related metals. Because of their affinity for iron, these so-called siderophile elements mostly sunk toward the metallic core of our planet early in its formation, and are relatively scarce in the Earth’s crust. Estimates of their abundance on some asteroids, such as the enigmatic Psyche 16 beyond the orbit of Mars, suggest concentrations several times higher than can be found in terrestrial mines.

Still, human ingenuity is all about cutting our coat according to our cloth. If such platinum-group metals are going to justify the literally astronomical costs of space mining, they’ll need to count on sustained high prices for the decade or so that would be needed to get such an operation up and running — and that sort of situation is all but unheard-of in the materials industry.

When prices of an essential commodity get excessively high, chemists get extraordinarily good at finding ways to avoid using it, scrap merchants improve their recycling rates, and miners discover new deposits that wouldn’t have been viable at lower prices. Even criminals get in on the game. That eventually pushes supply up and demand down, so that prices rebalance — a dynamic we’ve seen play out in the markets for rare earths, lithium and cobalt in recent years. The world mines about three times more platinum than it did in the early 1970s, but prices have barely changed once adjusted for inflation.

#### Plan gets circumvented – empirics prove.

Johnson 20 [Matthew Johnson, PhD, University of Technology Sydney, “Mining the high frontier: sovereignty, property and humankind’s common heritage in outer space,” 2020, PhD Thesis, https://opus.lib.uts.edu.au/handle/10453/142380, EA]

However, the terrestrial history of mineral sovereignty tells us that even modest constraints imposed on private space mining interests may be undermined through the capture of democratic institutions. Private mining firms that have drawn on the political infrastructure of the neoliberal network have proven adept at hindering policies and governments that protect common interests in common spaces, from counter-movements against the nationalisation of mining operations to concerted lobbying efforts against international agreements that seek to impose limits on atmospheric carbon emissions. The US rejection of the Moon Agreement is consistent with neoliberal resistance to protective ‘double movements’ in a host of policy arenas, ranging from the creation of ecological conservation zones and provision of free healthcare, to increasing minimum wages or funding for public education. When the interests of mining capital are supported by and even embedded within political institutions (as in the case of ‘revolving doors’ between industry and public office), a concerted effort will need to be made in domestic and international institutions to push international space law towards anything resembling the ambitions of the Moon Agreement. Given the emergent connections between NewSpace and the Atlas Network, any double movement towards the preservation of intergenerational rights in the space commons would likely meet well-funded and well-organised resistance.

#### Turn – asteroid mining revitalizes the economy.

Whittington 17 [Mark Whittington, writes frequently on space, politics, and popular culture. He has been published in the Wall Street Journal, Forbes, USA Today, and the Hill, “Why mining asteroids and the moon will not destroy the world's economy,” 01/17/17, *Blasting News*, https://us.blastingnews.com/opinion/2017/01/why-mining-asteroids-and-the-moon-will-not-destroy-the-world-s-economy-001401771.html, EA]

The market for asteroid and lunar mining is in space and not on Earth

The idea that asteroid mining is going to destroy the world economy exhibits a misunderstanding about how the new industry will work. The market for most Space materials, whether from the asteroids or the moon, will not be on Earth, for the most part, but in space. Water from the moon would be used to make rocket fuel and to support a lunar colony. Metals from worlds like 16 Psyche would be used to build things in space, not brought back to Earth as a building material. That arrangement would eliminate the need to ship everything from Earth.

The idea is that robotic miners would travel to places like 16 Psyche and mine and refine material.

Then 3D printers and assemblers would use that raw material to build satellites, space stations, spacecraft, even full scale colonies. Such structures would be of a complexity and on a scale that would be impossible were everything had to be shipped from Earth.

The economic development of space will expand the world''s economy

The large scale economic development of the high frontier of space would significantly expand the economy of the human species by creating more activity and more wealth. Some countries already recognize that fact. The United States has passed a law allowing space miners to keep the materials they extract.