## 1

#### A. Interpretation: The aff must specify the method of enforcement.

#### Specifying enforcement is key especially when previous treaties have had issues with ambiguities

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In conclusion, challenges arising in international space governance are not due to the absence of laws but due to lack of enforceability procedures for existing laws that could often result to noncompliance by state parties. This has, therefore, necessitated the need for a stricter institutional regime with competent jurisdiction and expert knowledge to drive the enforcement of international treaties as well as resolve ambiguities therein. We believe this recommendation is sufficient to keep states responsible and accountable in the exploration of space resources because “consequence is the strongest modifier of behavior.”15

#### B. Violation – they didn’t

#### C. Reasons to prefer

#### 1. Neg Ground- How the plan is perceived, which and how companies are restricted, and the process of the plan all vary wildly based on what the enforcement is which affects the link to every topic DA and we can’t PIC out of specific enforcement or CP any treaties

#### 2. Plan text is key- it’s the only way to provide textual competition for counterplans, as well as pre tournament and pre round prep

#### 3. Aff conditionality--Specification is inevitable- the 1AR can reclarify the plan to dodge our links making being neg impossible. Forcing them to take a position in the 1AC provides a stable stasis point for debate

#### 4. Vote negative on presumption- the plan does nothing absent a penalty for not voting

#### D. Evaluate the round through competing interpretations, its not what you do its what you justify. The affirmative must win offense for why plan vagueness is key to solve.

## 2

#### CP Text: States ought to

#### - ratify the Moon treaty

#### - ensure that mining happens “without interrupting safe and secure access to outer space, simultaneously allowing all countries a share in the proceeds.”

#### - make a new international body to enforce said regulation

#### Solves all their impacts; international regulation stops harmful asteroid mining and prevent their harms

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Legal Basis for Space Mining The first concern is establishing clear regulations regarding asteroid mining. With an intent to establish clear regulations with respect to asteroid mining and to legalise material extraction from the moon and other celestial bodies by private companies in the US, the US government legalised space mining in 2015 by introducing the US Commercial Space Launch Competitiveness Act, 2015.[xxvii] This move was heartily welcomed by the private companies as it provided legitimacy to their planned activities. Subsequently in 2017, Luxembourg followed suit.[xxviii] While the US has been a spacefaring nation for many decades now, Luxembourg aspires to become a global leader in the nascent race to mine resources in outer space. In the 1980s the tiny European nation arose out of almost nowhere to become a leader in the satellite communications industry; today it is looking to the skies again, hoping to be the Silicon Valley of asteroid mining.[xxix] In the backdrop of a thriving steel industry that faced trade recession during the oil crisis of 1973, Luxembourg is trying to capitalise on the potential of space mining. As Prime Minister Xavier Bettel put it, “We realized it wouldn’t be forever, the steel, so we decided to do other things.”[xxx] Similarly, looking beyond oil, the UAE is framing its policy approaches to make advances in two key areas: human space exploration, and commercial activities of resource extraction through mining.[xxxi] The two formal pieces of legislation (passed by the US and Luxembourg) provide an answer to the complex question of ownership in outer space; the two-word answer appears to be, “finders, keepers”. The US Commercial Space Launch Competitiveness Act, 2015 states: “A US citizen engaged in commercial recovery of an asteroid resource or a space resource shall be entitled to any asteroid resource or space resource obtained.”[xxxii] This legislation gives US space firms the right to own, keep, use, and sell the spoils of the cosmos as they deem fit. Luxembourg’s legislation is fairly analogous to the US Act, giving mining companies the right to keep their plunder. However, unlike the US law, Luxembourg’s does not require a company’s major stakeholders to be based in the country to enjoy its safeguards; the only requirement is for that company to have an office in the country.[xxxiii] In 2017, Japan entered into a five-year agreement with Luxembourg for mining operations in celestial bodies. Japan today appears a step closer to realising its objective of asteroid mining with two Japanese rovers, Minerva II-1, of JAXA landing on the surface of the asteroid named Ryugu in September 2018.[xxxiv] Earlier, Portugal and the UAE signed similar cooperation agreements with Luxembourg.[xxxv] Meanwhile, a few other countries—which have been critical of the US and Luxembourg, at the forefront of the space mining efforts—have also decided to join the field. The increasingly competitive and contested nature of outer space activities is spurring major spacefaring nations to push the boundaries in their space exploration. Asteroid mining could possibly become the next big thing and is already seeing a race among the space powers. The US and Luxembourg are at the forefront in space resource extraction in terms of the policy frameworks and funding.[xxxvi] Even as the US has clarified that the US Space Act 2015 is being misunderstood and that there is no change in the US policy towards national appropriation of space, the reality is that it has already spurred a major debate.[xxxvii] China and Russia are among those countries that are following on the path of the US and Luxembourg in undertaking mining missions in space. According to media reports, Ye Peijian, chief commander and designer of China’s lunar exploration programme has stated that China would send the first batch of asteroid exploration spacecraft around 2020.[xxxviii] Speaking to China’s Ministry of Science and Technology-run newspaper, Science and Technology Daily, Ye said that these asteroids have a high concentration of precious metals, which could rationalise the huge cost and risks involved in these activities as their economic value could run into the trillions of US dollars. Therefore, extraction, mining and transporting them back to Earth through robotic equipment will be a significant activity. Chinese scientists are working on missions to “bring back a whole asteroid weighing several hundred tonnes, which could turn asteroids with a potential threat to Earth into usable resources.”[xxxix] Ye was also quoted as saying that China has plans of “using an asteroid as the base for a permanent space station.”[xl] Helium mining on the moon is also part of China’s goals.[xli] Russia, for its part, is also responding to the space-mining developments of the last decade. For one, it plans to have a permanent lunar base somewhere between 2015 and 2020 for possible extraction of Helium.[xlii] Even as Russia’s official position on asteroid mining is that it is forbidden under the 1967 OST—which states that space is the “province of mankind”—the Russian industry players are of the view that they must follow the lead taken by the US and Luxembourg.[xliii] In early 2018, the director of the Scientific-Educational Center for Innovative Mining Technologies of the Moscow-based National University of Science and Technology MISIS (NUST MISIS), Pavel Ananyev, spoke about the Russian ambitions and proposed activities including space drilling rigs, water extraction on the Moon and 3D printers at space stations.[xliv] Russia’s private space companies including Dauria Aerospace, one of the first Russian private space companies, also hold the opinion that they must go forward in the same direction and call for a larger space to private sector to engage in extracting space resources.[xlv] Moscow may not have yet actively pursued space mining and resource extraction, but it is likely to pick up pace in the coming years alongside global efforts. Moscow clearly has a capacity gap in terms of funding because its earlier plans to have a permanent base in the Moon by 2015 is yet to happen. India, too, has ambitions in extraterrestrial resource extraction. In fact, a year after the US legislation, Prabhat Ranjan, executive director of Technology Information, Forecasting and Assessment Council (TIFAC), a policy organisation within the Department of Science and Technology, made a case for India to push ahead with lunar and asteroid mining. He said, “Moon is already being seen as a mineral wealth and further one can go up to the asteroids and start exploiting this. This can be a big game changer and if India doesn’t do this, we will lag behind.”[xlvi] More recently, Dr. K Sivan, Chairman of the country’s civil space organisation, Indian Space Research Organisation (ISRO), talked about ISRO’s plans for helium-3 extraction and said, “the countries which have the capacity to bring that source from the moon to Earth will dictate the process. I don’t want to be just a part of them, I want to lead them.”[xlvii] However, gaining proficiency in such missions is not easy – the NASA and ESA (the European Space Agency) have been discussing these possibilities for a longer time, albeit quietly. The ISRO Chairman’s response was characterised by an Indian commentator as “aspirational” and “emotional”, clearly conceding that the country’s technological wherewithal is yet to be adequate.[xlviii] Importantly, it is not clear how the legal and regulatory aspects of space mining operations are being dealt with. There was one instance, though, when Luxembourg and Japan in a joint press statement said, “The exchange of information may cover all the issues of the exploration and commercial utilization of space resources, including legal, regulatory, technological, economic, and other aspects.”[xlix] Whether such legalisation is truly legal is arguable. Space Mining: Legal or Not? The Outer Space Treaty (OST) of 1967, considered the global foundation of the outer space legal regime, along with the other four associated international instruments have provided the fundamental basis for outer space activities by prohibiting certain activities and emphasising aspects such as the “common heritage of mankind”. These agreements have been useful in highlighting the global common nature of outer space. At the same time, however, they have been insufficient and ambiguous in providing clear regulations to newer space activities such as asteroid mining. Based on the premise of ‘res communis’, the magna carta of space law, the OST, illustrates outer space as “the province of all mankind”.[l] Under Article I, States are free to explore and use outer space and to access all celestial bodies “on the basis of equality and in accordance with international law.”[li] Although the OST does not explicitly mention “mining” activities, under Article II, outer space including the Moon and other celestial bodies are “not subject to national appropriation by claim of sovereignty” through use, occupation or any other means.[lii] Furthermore, the Moon Agreement, 1979, not only defines outer space as “common heritage of mankind” but also proscribes commercial exploitation of planets and asteroids by States unless an international regime is established to govern such activities for “rational management,” “equitable sharing” and “expansion of opportunities” in the use of these resources.[liii] Slipping conveniently through the loophole in the OST, both the US and Luxembourg have authorised companies to claim exclusive ownership over extracted resources (but not of the asteroid itself). Proponents argue that since no sovereign nation is actually asserting rights over an area of outer space, instead, it is only a private unit claiming rights over singular resources, the treaty norm, “national appropriation by claim of sovereignty”, is not being violated. In the words of renowned space lawyer, Frans von der Dunk, “In terms of the law, yes it’s true that no country can claim any part of outer space as national territory — but that doesn’t mean private industry can’t mine resources.”[liv] Quoting reference from maritime law, Luxembourg regards space resources as appropriable akin to fish and shellfish, but celestial bodies and asteroids are not, just like the high sea. It is noteworthy that out of the only 18 nations that have ratified the Moon Agreement,[lv] none are major spacefaring nations, thereby giving themselves a convenient leeway to not abide by the same. These unilateral initiatives have set off a critical response from the international community. Applying literal interpretation of the OST, there is certainly room to construe that space mining may be legal, compared to the Moon Agreement whose prohibition is absolute. However, taking into consideration the letter and spirit of the OST, strengthened by the Moon Agreement, the argument that “national appropriation” only extends to appropriation of territory and not appropriation of resources is a far reach. That resource extraction is contemplated, albeit implicitly, in the OST, is nothing but logical. Not only have such claims of possessory rights not been recognised in the past, there is also global consensus regarding its illegality.[lvi] It therefore forms a part of customary international law, despite the Moon Agreement not having been widely ratified. In this light, the legalisation of space mining is a sheer violation of the elemental principles of international space law. Yet, there is no clarity on what activity is allowed and what is prohibited in outer space under the existing law.[lvii] There is ambiguity around most issues—from “who would license and regulate asteroid mining operations” to the legality of these activities as per the existing international space law.[lviii] When comparing it to the law of the seas, resource appropriation in the high seas and deep seabed is governed by the United Nations Convention on the Law of the Sea (UNCLOS), 1982, and that in Antarctica, as per the Protocol on Environmental Protection to the Antarctic Treaty, 1991. While the former is strictly regulated under Part XI of UNCLOS, the latter is completely forbidden but for scientific purposes. The law of the sea argument—“owning the fish, not the sea”—cannot be applied to outer space primarily because fish are living resources that can reproduce and therefore are renewable. Outer space resources, on the other hand, are depletable: once harvested, they cannot be replenished. The analogy with fish and seas, therefore, is not a fair one and its transposition to outer space and celestial bodies would be inaccurate. Perhaps a more comparable regime is the deep seabed, which contemplates property rights over mineral extraction. The utilisation and ownership of the deep seabed’s resources are exclusively structured around the International Seabed Authority (ISA), which is responsible for organising, carrying out and controlling all activities in the seabed.[lix] Not only must State parties seek sanction from the ISA before beginning resource exploitation, but the fiscal benefits from seabed mining must also be shared among all.[lx] Evidently, even the UNCLOS upholds State ownership and fair distribution over individual ownership and self-centred gains.[lxi] By allowing private ownership, the US and Luxembourg are once again in contravention of the very same law they are relying on. The touchstone principle, “province of all mankind” is also being defeated. Therefore, to even reap the limited benefits as under UNCLOS, at least the derivation must be made alike. This argument too falls flat. The Way Ahead Undoubtedly, growing technological adeptness has made space mining inevitable and, therefore, the question is no longer “if” but “when”. Nevertheless, a scenario where companies can, solely based on domestic laws, steadily exploit mineral resources in outer space, would be universally unacceptable. Minus regulations, the realisation of space exploitation will create great disparity between nations and disrupt dynamics of the world economy. Regulations are particularly important in the context of the space debris problem. We definitely do not wish for a future, befittingly described by renowned engineer and inventor Graham Hawkes, thus: “Space exploration promised us alien life, lucrative planetary mining, and fabulous lunar colonies. News flash, ladies and gents: Space is nearly empty. It’s a sterile vacuum, filled mostly with the junk we put up there.”[lxii] Therefore, it is extremely important that resource appropriation is carried out in an ethical manner, without interrupting safe and secure access to outer space, simultaneously allowing all countries a share in the proceeds. Technological advances and financial readiness are pushing both, states and non-state players towards new ventures in outer space. Yet, the rules of engagement especially dealing with the new commercial activities are far from ideal. There is a clear and urgent need to debate and come up with either a new regulation or accommodate the space mining activities within the existing international legal measures. Experts have articulated that these could possibly be addressed under the existing property law principles or old mining law principles.[lxiii] However, given the scale of activities that states and non-state parties will engage in, the ability of the existing regime to address space mining could be highly inadequate. The second option would be to develop a new instrument including an institutional architecture that would set out the parameters for activities related to resource extraction and space mining. Since there are a good number of commercial players playing a formidable role in asteroid mining, there has to be space for commercial players in the new gig, which might be a big departure from the earlier era institutions that saw states being the sole authority in regulating activities in outer space. A clear role for commercial players has been articulated for some time but the global space community has yet to reach a consensus in how they can be incorporated into the global governance debates. The apprehension on the part of a number of states is driven by the fact that private sector participation is still largely a western phenomenon. This trend may be undergoing change in other parts of the world but until there is a sizeable private sector community in other major spacefaring powers, there is a fear that the western bloc of countries may stand to gain from the industry being represented in the global governance debates. A third possible option is to get a larger global endorsement of the Moon Treaty, which highlights the common heritage of mankind. The Moon Treaty is important as it addresses a “loophole” of the OST “by banning any ownership of any extraterrestrial property by any organization or private person, unless that organization is international and governmental.”[lxiv] But the fact that it has been endorsed only by a handful of countries makes it a “failure” from the international law perspective.[lxv] Nevertheless, efforts must be made to strengthen the support base for the Moon Agreement given the potential pitfalls of resource extraction and space mining activities in outer space. Signatories to the Moon Treaty can take the lead within multilateral platforms such as the UN to debate the usefulness of the treaty in the changed context of technological advancements and new geopolitical dynamics, and potentially find compromises where there are disagreements. Pursuing a collective approach is ideal. An example is UNCLOS, which demonstrates that the international society possesses the capability of regulating mining quarters deemed to be the “province of mankind”. However, a sui generis legal framework must be crafted because the difference between the marines and outer space and their resources is wide, and the regulations are too region-specific to permit a superimposition of the oceanic regime to outer space. A sound legal environment will protect both the company performing operations and its beneficiaries, while ensuring even-handed resource allocation. In addition, regulations spelling out safety standards and identifying safety zones around mining operations could be useful in ensuring safe and secure operations in outer space. It would be wrong, however, to say that the international community has not debated over this. In fact, one of the main agenda points of the fifty-seventh session of UNCOPUS Legal Committee held in April 2018, was especially devoted to “general exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources.”[lxvi] Upon evaluation, it is clear that countries are not against space mining as such; rather the contentious points are vis-à-vis authorisation, regulation, and where to place responsibility. There also appears to be concurrence regarding the need for international coordination efforts of some sort. Over the last two years, The Hague Space Resources Governance Working Group,[lxvii] established with the purpose of “assess[ing] the need for a regulatory framework for space resource activities, has identified 19 “building blocks”,[lxviii] encompassing subject matters that could be included in such a regulatory framework. Although this leaves a lot of hope for the legitimate mining of space resources, its status is still pending. Also, several questions need to be agreed upon by the global space policy community before the establishment of a framework. First, there must be an agreement among all the space powers on the need for a global governance framework for the use of space resources. This must be followed by detailed deliberations on the scope, mandate and objectives of such a framework. Can and should there be safety zones and exclusive rights be recognised under such a framework and how one can ensure equitable sharing of the resources, and lastly, the role of industries and how the interests of the industry as pioneers in this area can be secured. These are all pertinent questions that need to be considered and debated before an international regime for extraction and use of space resources can be established.[lxix] Even legal space mining activity could have serious impacts in two ways. For instance, any technological spinoffs that a country might have could add to the space weaponisation debate. Two, the erosion of norms with regard to space mining could have a cascading effect on other norms in the same issue area such as weaponisation of space. It is imperative for nations to actively combine their efforts to ensure that this activity transpires in the most globally acceptable manner and not one which stirs anarchism. The ancient Roman maxim, ‘Quod omnes tangit ab omnibus approbatur’ (What touches all must be approved by all) gains due traction in this kind of a scenario. Therefore, a universal activity like space exploration mandates an international guideline; or else, the first haul from mining, instead of earning admiration and exultation, will only be enmeshed in litigation.

## 3

#### Space-for-space economy is beginning to develop now because of private enterprise in space

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

#### Space-for-space is key for continued space-for-earth developments like asteroid mining

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To be sure, people have dreamt of using the vacuum and weightlessness of space to source or make things that cannot be made on earth for half a century, and time and again the business case has failed to pan out. Skepticism is natural. Those failures, however, have been in space-for-earth applications. For example, two startups of the 2010s, Planetary Resources, Inc. and Deep Space Industries, recognized the potential of space mining early on. For both companies, however, the lack of a space-for-space economy meant that their near-term survival depended on selling mined material — precious metals or rare elements — to earthbound customers. When it became clear that demand was insufficient to justify the high costs, funding dried up, and both companies pivoted to other ventures. These were failures of space-for-earth business models — but the demand for in-space mining of raw building material, metals, and water will be enormous once humans are living in space (and are therefore far cheaper to supply). In other words, when people are living and working in space, we are likely to look back on these early asteroid mining companies less as failures and more as simply ahead of their time.

#### Mining solves extinction from scarcity.

Pelton 17—(Director Emeritus of the Space and Advanced Communications Research Institute at George Washington University, PHD in IR from Georgetown).. Pelton, Joseph N. 2017. The New Gold Rush: The Riches of Space Beckon! Springer. Accessed 8/30/19.

Are We Humans Doomed to Extinction? What will we do when Earth’s resources are used up by humanity? The world is now hugely over populated, with billions and billions crammed into our overcrowded cities. By 2050, we may be 9 billion strong, and by 2100 well over 11 billion people on Planet Earth. Some at the United Nations say we might even be an amazing 12 billion crawling around this small globe. And over 80 % of us will be living in congested cities. These cities will be ever more vulnerable to terrorist attack, natural disaster, and other plights that come with overcrowding and a dearth of jobs that will be fueled by rapid automation and the rise of artifi cial intelligence across the global economy. We are already rapidly running out of water and minerals. Climate change is threatening our very existence. Political leaders and even the Pope have cautioned us against inaction. Perhaps the naysayers are right. All humanity is at tremendous risk. Is there no hope for the future? This book is about hope. We think that there is literally heavenly hope for humanity. But we are not talking here about divine intervention. We are envisioning a new space economy that recognizes that there is more water in the skies that all our oceans. Th ere is a new wealth of natural resources and clean energy in the reaches of outer space—more than most of us could ever dream possible. There are those that say why waste money on outer space when we have severe problems here at home? Going into space is not a waste of money. It is our future. It is our hope for new jobs and resources. The great challenge of our times is to reverse public thinking to see space not as a resource drain but as the doorway to opportunity. The new space frontier can literally open up a “gold rush in the skies.” In brief, we think there is new hope for humanity. We see a new a pathway to the future via new ventures in space. For too long, space programs have been seen as a money pit. In the process, we have overlooked the great abundance available to us in the skies above. It is important to recognize there is already the beginning of a new gold rush in space—a pathway to astral abundance. “New Space” is a term increasingly used to describe radical new commercial space initiatives—many of which have come from Silicon Valley and often with backing from the group of entrepreneurs known popularly as the “space billionaires.” New space is revolutionizing the space industry with lower cost space transportation and space systems that represent significant cost savings and new technological breakthroughs. “New Commercial Space” and the “New Space Economy” represent more than a new way of looking at outer space. These new pathways to the stars could prove vital to human survival. If one does not believe in spending money to probe the mysteries of the universe then perhaps we can try what might be called “calibrated greed” on for size. One only needs to go to a cubesat workshop, or to Silicon Valley or one of many conferences like the “Disrupt Space” event in Bremen, Germany, held in April 2016 to recognize that entrepreneurial New Space initiatives are changing everything [ 1 ]. In fact, the very nature and dimensions of what outer space activities are today have changed forever. It is no longer your grandfather’s concept of outer space that was once dominated by the big national space agencies. The entrepreneurs are taking over. The hopeful statements in this book and the hard economic and technical data that backs them up are more than a minority opinion. It is a topic of growing interest at the World Economic Forum, where business and political heavyweights meet in Davos, Switzerland, to discuss how to stimulate new patterns of global economic growth. It is even the growing view of a group that call themselves “space ethicists.” Here is how Christopher J. Newman, at the University of Sunderland in the United Kingdom has put it: Space ethicists have offered the view that space exploration is not only desirable; it is a duty that we, as a species, must undertake in order to secure the survival of humanity over the longer term. Expanding both the resource base and, eventually, the habitats available for humanity means that any expenditure on space exploration, far from being viewed as frivolous, can legitimately be rationalized as an ethical investment choice. (Newman) On the other hand there are space ethicists and space exobiologists who argue that humans have created ecological ruin on the planet—and now space debris is starting to pollute space. Th ese countervailing thoughts by the “no growth” camp of space ethicists say we have no right to colonize other planets or to mine the Moon and asteroids—or at least no right to do so until we can prove we can sustain life here on Earth for the longer term. However, for most who are planning for the new space economy the opinion of space philosophers doesn’t really fl oat their boat. Legislators, bankers, and aspiring space entrepreneurs are far more interested in the views of the super-rich capitalists called the space billionaires. A number of these billionaires and space executives have already put some very serious money into enterprises intent on creating a new pathway to the stars. No less than five billionaires with established space ventures—Elon Musk, Paul Allen, Jeff Bezos, Sir Richard Branson, and Robert Bigelow—have invested millions if not billions of dollars into commercializing space. They are developing new technologies and establishing space enterprises that can bring the wealth of outer space down to Earth. This is not a pipe dream, but will increasingly be the economic reality of the 2020s. These wealthy space entrepreneurs see major new economic opportunities. To them space represents the last great frontier for enterprising pioneers. Th us they see an ever-expanding space frontier that offers opportunities in low-cost space transportation, satellite solar power satellites to produce clean energy 24h a day, space mining, space manufacturing and production, and eventually space habitats and colonies as a trajectory to a better human future. Some even more visionary thinkers envision the possibility of terraforming Mars, or creating new structures in space to protect our planet from cosmic hazards and even raising Earth’s orbit to escape the rising heat levels of the Sun in millennia to come. Some, of course, will say this is sci-fi hogwash. It can’t be done. We say that this is what people would have said in 1900 about airplanes, rocket ships, cell phones and nuclear devices. The skeptics laughed at Columbus and his plan to sail across the oceans to discover new worlds. When Thomas Jefferson bought the Louisiana Purchase from France or Seward bought Alaska, there were plenty of naysayers that said such investment in the unknown was an extravagant waste of money. A healthy skepticism is useful and can play a role in economic and business success. Before one dismisses the idea of an impending major new space economy and a new gold rush, it might useful to see what has already transpired in space development in just the past five decades. The world’s first geosynchronous communications satellite had a throughput capability of about 500 kb / s. In contrast, today’s state of the art Viasat 2 —a half century later— has an impressive throughput of some 140 Gb/s. Th is means that the relative throughput is nearly 300,000 greater, while its lifetime is some ten times longer (Figs. 1.1 and 1.2 ). Each new generation of communications satellite has had more power, better antenna systems, improved pointing and stabilization, and an extended lifetime. And the capabilities represented by remote sensing satellites , meteorological satellites , and navigation and timing satellites have also expanded their capabilities and performance in an impressive manner. When satellite applications first started, the market was measured in millions of dollars. Today commercial satellite services exceed a quarter of a billion dollars. Vital services such as the Internet, aircraft traffi c control and management, international banking, search and rescue and much, much more depend on application satellites. Th ose that would doubt the importance of satellites to the global economy might wish to view on You Tube the video “If Th ere Were a Day Without Satellites?” [ 2 ]. Let’s check in on what some of those very rich and smart guys think about the new space economy and its potential. (We are sorry to say that so far there are no female space billionaires, but surely this, too, will come someday soon.) Of course this twenty-fi rst century breakthrough that we call the New Space economy will not come just from new space commerce. It will also come from the amazing new technologies here on Earth. Vital new terrestrial technologies will accompany this cosmic journey into tomorrow. Information technology, robotics, artificial intelligence and commercial space travel systems have now set us on a course to allow us humans to harvest the amazing riches in the skies—new natural resources, new energy, and even totally new ways of looking at the purpose of human existence. If we pursue this course steadfastly, it can be the beginning of a New Space renaissance. But if we don’t seek to realize our ultimate destiny in space, Homo sapiens can end up in the dustbin of history—just like literally millions of already failed species. In each and every one of the five mass extinction events that have occurred over the last 1.5 billion years on Earth, some 50–80 % of all species have gone the way of the T. Rex, the woolly mammoth, and the Dodo bird along with extinct ferns, grasses and cacti. On the other hand, the best days of the human race could be just beginning. If we are smart about how we go about discovering and using these riches in the skies and applying the best of our new technologies, it could be the start of a new beginning for humanity. Konstantin Tsiokovsky, the Russian astronautics pioneer, who fi rst conceived of practical designs for spaceships, famously said: “A planet is the cradle of mankind, but one cannot live in a cradle forever.” Well before Tsiokovsky another genius, Leonardo da Vinci, said, quite poetically: “Once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return.” The founder of the X-Prize and of Planetary Resources, Inc., Dr. Peter Diamandis, has much more brashly said much the same thing in quite diff erent words when he said: “The meek shall inherit the Earth. The rest of us will go to Mars.” The New Space Billionaires Peter Diamandis is not alone in his thinking. From the list of “visionaries” quoted earlier, Elon Musk, the founder of SpaceX; Sir Richard Branson, the founder of Virgin Galactic; and Paul Allen, the co-founder of Microsoft and the man who financed SpaceShipOne, the world’s first successful spaceplane have all said the future will include a vibrant new space economy. Th ey, and others, have said that we can, we should and we soon shall go into space and realize the bounty that it can offer to us. Th e New Space enterprise is today indeed being led by those so-called space billionaires , who have an exciting vision of the future. They and others in the commercial space economy believe that the exploitation of outer space may open up a new golden age of astral abundance. They see outer space as a new frontier that can be a great source of new materials, energy and various forms of new wealth that might even save us from excesses of the past. Th is gold rush in the skies represents a new beginning. We are not talking about expensive new space ventures funded by NASA or other space agencies in Europe, Japan, China or India. No, these eff orts which we and others call New Space are today being forged by imaginative and resourceful commercial entrepreneurs. Th ese twenty-fi rst century visionaries have the fortitude and zeal to look to the abundance above. New breakthroughs in technology and New Space enterprises may be able to create an “astral life raft” for humanity. Just as Columbus and the Vikings had the imaginative drive that led them to discover the riches of a new world, we now have a cadre of space billionaires that are now leading us into this New Space era of tomorrow. These bold leaders, such as Paul Allen and Sir Richard Branson, plus other space entrepreneurs including Jeff Bezos of Amazon and Blue Origin, and Robert Bigelow, Chairman of Budget Suites and Bigelow Aerospace, not only dream of their future in the space industry but also have billions of dollars in assets. These are the bright stars of an entirely new industry that are leading us into the age of New Space commerce. These space billionaires, each in their own way, are proponents of a new age of astral abundance. Each of them is launching new commercial space industries. They are literally transforming our vision of tomorrow. These new types of entrepreneurial aerospace companies—the New Space enterprises—give new hope and new promise of transforming our world as we know it today. The New Space Frontier What happens in space in the next few decades, plus corresponding new information technologies and advanced robotics, will change our world forever. These changes will redefi ne wealth, change our views of work and employment and upend almost everything we think we know about economics, wealth, jobs, and politics. Th ese changes are about truly disruptive technologies of the most fundamental kinds. If you thought the Internet, smart phones, and spandex were disruptive technologies, just hang on. You have not seen anything yet. In short, if you want to understand a transition more fundamental than the changes brought to the twentieth century world by computers, communications and the Internet, then read this book. There are truly riches in the skies. Near-Earth asteroids largely composed of platinum and rare earth metals have an incredible value. Helium-3 isotopes accessible in outer space could provide clean and abundant energy. There is far more water in outer space than is in our oceans. In the pages that follow we will explain the potential for a cosmic shift in our global economy, our ecology, and our commercial and legal systems. These can take place by the end of this century. And if these changes do not take place we will be in trouble. Our conventional petro-chemical energy systems will fail us economically and eventually blanket us with a hydrocarbon haze of smog that will threaten our health and our very survival. Our rare precious metals that we need for modern electronic appliances will skyrocket in price, and the struggle between “haves” and “have nots” will grow increasingly ugly. A lack of affordable and readily available water, natural resources, food, health care and medical supplies, plus systematic threats to urban security and systemic warfare are the alternatives to astral abundance. The choices between astral abundance and a downward spiral in global standards of living are stark. Within the next few decades these problems will be increasingly real. By then the world may almost be begging for new, out of- the-box thinking. International peace and security will be an indispensable prerequisite for exploitation of astral abundance, as will good government for all. No one nation can be rich and secure when everyone else is poor and insecure. In short, global space security and strategic space defense, mediated by global space agreements, are part of this new pathway to the future.

## Case

#### The standard is maximizing expected well-being –

**1] Moral uncertainty means preventing extinction should be our highest priority.  
Bostrom 12** [Nick Bostrom. Faculty of Philosophy & Oxford Martin School University of Oxford. “Existential Risk Prevention as Global Priority.” Global Policy (2012)]  
These reflections on **moral uncertainty suggest** an alternative, complementary way of looking at existential risk; they also suggest a new way of thinking about the ideal of sustainability. Let me elaborate.¶ **Our present understanding of axiology might** well **be confused. We may not** nowknow — at least not in concrete detail — what outcomes would count as a big win for humanity; we might not even yet **be able to imagine the best ends** of our journey. **If we are** indeedprofoundly **uncertain** about our ultimate aims,then we should recognize that **there is a great** option **value in preserving** — and ideally improving — **our ability to recognize value and** to **steer the future accordingly. Ensuring** that **there will be a future** version of **humanity** with great powers and a propensity to use them wisely **is** plausibly **the best way** available to us **to increase the probability that the future will contain** a lot of **value.** To do this, we must prevent any existential catastrophe.

#### **2] Independently, extinction turns suffering impacts – mass death causes massive amounts of structural violence**

#### 3] Exclusion is inevitable and non-unique. Slow violence framing means we de-value extinction just as much as extinction-first framing de-values slow violence. Policy is about weighing those trade-offs, so they need to win that theirs are larger.

#### 4] The future definitively outweighs the present under any framework

Todd ’17 [Benjamin, Ben managed 80,000 Hours while it grew from a lecture, to a student society, to the organisation it is today. Before 80,000 Hours, he was the first undergraduate to intern as an analyst at a top investment fund. He has a 1st from Oxford in Physics and Philosophy, has published in Climate Physics, once kick-boxed for Oxford, and speaks Chinese, badly, “Future generations and their moral significance”, October 2017, https://80000hours.org/articles/future-generations/]//pranav

In almost all of these cases, there’s potentially a lot more of it to come in the future: The Earth could remain habitable for 600-800 million years,1 so there could be about 21 million future generations,2 and they could lead great lives, whatever you think “great” consists of. Even if you don’t think future generations matter as much as the present generation, since there could be so many of them, they could still be our key concern. Civilization could also eventually reach other planets — there are 100 billion planets in the Milky Way alone.3 So, even if there’s only a small chance of this happening, there could also be dramatically more people per generation than there are today. By reaching other planets, civilization could also last even longer than if we stay on the Earth.If you think it’s good for people to live happier and more flourishing lives, there’s a possibility that technology and social progress will let people have much better and longer lives in the future (including those in the present generation). So, putting these first three points together, there could be many more generations, with far more people, living much better lives. The three dimensions multiply together to give the potential scale of the future. If what you value is justice and virtue, then the future could be far more just and virtuous than the world today.4 If what you value is artistic and intellectual achievement, a far wealthier and bigger civilization could have far greater achievements than our own. And so on. This suggests that, insofar as you care about making the world a better place, your key concern should be to increase the chance that the future goes well rather than badly. This isn’t to deny that you have special obligations to your friends and family, and an interest in your own life going well. We’re only talking about what matters insofar as you care about helping others in general. Philosophers often say what matters “from the point of view of the universe” or according to “impartial altruism”. We think everyone should care about the lives of other people to some degree, even though it might not be your only goal. People often assume the long-term value thesis is especially about the possibility of there being lots of people in the future, and so only of interest to a narrow range of ethical views (especially utilitarian totalism), but as we can see in the list above, it’s actually much broader. It just rests on the idea that if something is of value, it’s better to have more of what’s valuable rather than less, and that it’s possible to have much more of it in the future. This might include non-welfare values, such as beauty or knowledge. The arguments are also not about humans; rather, they concern whatever agents in the future might have moral value, including other species. People also often think that the long-term value thesis assumes the future will have positive rather than negative value. Quite the opposite is true — the future could also contain far more suffering than the present, and this implies even more concern for how it unfolds. It’s important to reduce the probability of bad futures as well as increase the probability of good ones.

#### 5] Governments must use util since they can’t focus on every individual rights violation

Goodin 95 Robert, 1995, Philosopher of Political Theory, Public Policy, and Applied Ethics. Utilitarianism as a Public Philosophy, Cambridge University Press, pg. 26-27

The great advantage of utilitarianism as a guide to public conduct is that it avoids gratuitous sacrifices, it ensures as best we are able to ensure in the uncertain world of public policy-making that policies are sensitive to people’s interests or desires or preferences. The great failing of more deontological theories, applied to those realms, is that they fixate upon duties done for the sake of duty rather than for the sake of any good that is done by doing one’s duty. Perhaps it is permissible (perhaps it is even proper) for private individuals in the course of their personal affairs to fetishize duties done for their own sake. It would be a mistake for public officials to do likewise, not least because it is impossible. The fixation on motives makes absolutely no sense in the public realm, and might make precious little sense in the private one even, as Chapter 3 shows. The reason public action is required at all arises from the inability of uncoordinated individual action to achieve certain morally desirable ends. Individuals are rightly excused from pursuing those ends. The inability is real; the excuses, perfectly valid. But libertarians are right in their diagnosis, wrong in their prescription. That is the message of Chapter 2. The same thing that makes those excuses valid at the individual level – the same thing that relieves individuals of responsibility – makes it morally incumbent upon individuals to organize themselves into collective units that are capable of acting where they as isolated individuals are not. When they organize themselves into these collective units, those collective deliberations inevitably take place under very different circumstances and their conclusions inevitably take very different forms. Individuals are morally required to operate in that collective manner, in certain crucial respects. But they are practically circumscribed in how they can operate, in their collective mode. And those special constraints characterizing the public sphere of decision-making give rise to the special circumstances that make utilitarianism peculiarly apt for public policy-making, in ways set out more fully in Chapter 4. Government house utilitarianism thus understood is, I would argue, a uniquely defensible public philosophy.

#### 6] Extinction justifies moral loopholes – therefore, ignoring it is unethical.

Bok, 1988 (Sissela Bok, Professor of Philosophy, Brandeis, Applied Ethics and Ethical Theory, Ed. David Rosenthal and Fudlou Shehadi, 1988)

The same argument can be made for Kant’s other formulations of the Categorical Imperative: “So act as to use humanity, both in your own person and in the person of every other, always at the same time as an end, never simply as a means”; and “So act as if you were always through actions a law-making member in a universal Kingdom of Ends.” No one with a concern for humanity could consistently will to risk eliminating humanity in the person of himself and every other or to risk the death of all members in a universal Kingdom of Ends for the sake of justice. To risk their collective death for the sake of following one’s conscience would be, as Rawls said, “irrational, crazy.” And to say that one did not intend such a catastrophe, but that one merely failed to stop other persons from bringing it about would be beside the point when the end of the world was at stake.For although it is true that we cannot be held responsible for most of the wrongs that others commit, the Latin maxim presents a case where we would have to take such a responsibility seriously—perhaps to the point of deceiving, bribing, even killing an innocent person, in order that the world not perish.

#### 7] Their “cumulative impacts” warrant also goes neg—Extinction is the most cumulative impact—it doesn’t just kill 7 billion people; it forecloses all possibility of future generations forever

### TL

#### Evaluate ONLY the parts of cap and inequality the aff can solve – I’ll give you a hint: its next to nothing. Do not give them all of the generic cap or inequality impacts they read in the 1AC.

#### Vote neg on presumption – space privatization may be an example of neolib, but no chance that they solve it:

#### None of their ev is reverse causal – industrial agriculture, the defense industrial base, Amazon, Koch Industries are all examples of capitalism – plus capitalism predates space exploration, which proves they don’t control the root cause

#### 1AC Holen is a critique of growth mindset writ large – if governments are fundamentally neoliberal, they have the same incentives to appropriate space as private companies – the aff has zero bearing on NASA – means they don’t solve spatial fixes because NASA can appropriate space resources, then sell them to private companies – proven by existing contracts between NASA and NewSpace –

#### No brightline for when spatial fixes on Earth are exhausted – corporations will continue extracting resources from Earth even if it’s less lucrative

#### No plan text or any solvency warrants/cards is damning – don’t allow new 1AR spins or readings because it shortchanges the entire 1NC

### Adv 1

#### 1] Space colonization is an insurance policy which guarantees human survival and avoids things like warming

Worrall 18 [Simon Worrall has written for publications all over the world, including The Smithsonian, The London Sunday Times, The Guardian, Paris Review, Conde Nast Traveler and The New Yorker. Since 1997, he has been a regular contributor to National Geographic Magazine, with assignments to London, Wales, Patagonia and China, and now curates a weekly column on the NG website called Book Talk. Michio Kaku is an American theoretical physicist, futurist, and popularizer of science. He is a professor of theoretical physics in the City College of New York and CUNY Graduate Center. “There’s Only One Way For Humanity to Survive. Go To Mars.” National Geographic. March 2, 2018. <https://www.nationalgeographic.com/science/article/there-s-only-one-way-for-humanity-to-survive--go-to-mars->] HW AL

Right at the beginning of the book, you make the shocking prediction: “**Either we must leave the Earth or we will perish.**” Are humanity’s prospects really that dire? And doesn’t this play into the nihilistic feeling that there is nothing we can do to save this planet? If you take a look at evolution on Earth, 99.9 percent of all life forms have gone extinct. When things change, either you adapt or die. That’s the law of Mother Nature. We face various hazards. First of all, we have self-inflicted problems like global warming, nuclear proliferation and bio-engineered germ warfare. Plus, Mother Nature has hurled at the Earth a number of extinction cycles. The dinosaurs, for example, didn’t have a space program. And **that’s why the dinosaurs are not here today.** On the other hand, we shouldn’t use this as an excuse to pollute the Earth, or let global warming run amok. We should cure these problems without having to leave for Mars or another planet, because it’s impossible to remove the entire population of Earth to Mars. **We’re talking about an insurance policy—a backup plan in case something does happen to the Earth.** I once talked to Carl Sagan about this, who said, “We live in the middle of a shooting gallery with thousands of asteroids in our path that we haven’t even discovered yet. So, let’s be at least a two-planet species, as a backup plan.” One of the beautiful images you conjure is of ballet dancing on Mars. Explain why this may one day be less fanciful than it seems. We have the Olympics, where we have athletes that understand the laws of gravity on Earth, but once we’re on the moon and Mars, we have a totally different set of physical constraints. Here, ice skaters can’t do anything more than a quad; four rotations in the air and that’s it! No one has ever done a quint. However, on Mars the gravity is only 30 percent of Earth, so one day we may have an Olympics on Mars where people could do four, five, six, seven rotations in the air, and ballet, or acrobatics, and gymnastics. A whole new set of athletes could be formed because they are adapted to a new environment where the gravity and air pressure is lower. The astronaut Alan Shepard was the first one to golf—golf—on the moon! He snuck on a pair of golf irons. NASA was horrified, yet in the Smithsonian Museum now, you can see a replica of the golf clubs he used, to prove that interstellar sports could become a real possibility. You use the phrase “the fourth wave of science.” Explain what this means and how it could one day make it possible to terraform Mars. We’ve had three waves of scientific innovation. The first wave, the Industrial Revolution, gave us the steam engine, the locomotive, and factories. The second wave was electricity and magnetism, whereby we had TV, internal combustion cars, a beginning of the space program. The third revolution is high tech: computers, lasers, the Internet. Now we have the fourth wave of innovation: artificial intelligence, biotech, and nanotech. That’s going to change the way we view Mars. Many people say Mars is cold and desolate, and there’s nothing to grow there. We can genetically modify plants and algae to thrive in the Martian atmosphere. But who’s going to do the heavy lifting? We all would like to see futuristic cities on Mars, but robots are going to become much more adapted to working in these harsh environments by the end of this century, so we expect to see robotic construction workers building the fantastic domed cities you see in science fiction novels.

#### 2] Growth is sustainable – yes absolute decoupling

Hausfather 4/6 [(Zeke, climate scientist and energy systems analyst whose research focuses on observational temperature records, climate models, and mitigation technologies, PhD in climate science from the University of California, Berkeley, former research scientist with Berkeley Earth, senior climate analyst at Project Drawdown, and US analyst for Carbon Brief) “Absolute Decoupling of Economic Growth and Emissions in 32 Countries,” Breakthrough Institute, 4/6/2021] JL

The past 30 years have seen immense progress in improving the quality of life for much of humanity. Extreme poverty — the number of people living on less than $1.90 per day — has fallen by nearly two-thirds, from 1.9 billion to around 650 million. Life expectancy has risen in most of the world, along with literacy and access to education, while infant mortality has fallen. Despite perceptions to the contrary, the average person born today is likely to have access to more opportunities and have a better quality of life than at any other point in human history. Much of this increase in human wellbeing has been propelled by rapid economic growth driven largely by state-led industrial policy, particularly in poor-to-middle income countries. However, this growth has come at a cost: between 1990 and 2019, global emissions of CO2 increased by 56%. Historically, economic growth has been closely linked to increased energy consumption — and increased CO2 emissions in particular — leading some to argue that a more prosperous world is one that necessarily has more impacts on our natural environment and climate. There is a lively academic debate about our ability to “absolutely decouple” emissions and growth — that is, the extent to which the adoption of clean energy technology can allow emissions to decline while economic growth continues. Over the past 15 years, however, something has begun to change. Rather than a 21st century dominated by coal that energy modelers foresaw, global coal use peaked in 2013 and is now in structural decline. We have succeeded in making clean energy cheap, with solar power and battery storage costs falling 10-fold since 2009. The world produced more electricity from clean energy — solar, wind, hydro, and nuclear — than from coal over the past two years. And, according to some major oil companies, peak oil is upon us — not because we have run out of cheap oil to produce, but because demand is falling and companies expect further decline as consumers increasingly shift to electric vehicles. The world has long been experiencing a relative decoupling between economic growth and CO2 emissions, with the emissions per unit of GDP falling for the past 60 years. This is the case even in countries like India and China that have been undergoing rapid economic growth. But relative decoupling alone is inadequate in a world where global CO2 emissions need to peak and decline in the next decade to give us any chance at limiting warming to well below 2℃, in line with Paris Agreement targets. Thankfully, there is increasing evidence that the world is on track to absolutely decouple CO2 emissions and economic growth — with global CO2 emissions potentially having peaked in 2019 and unlikely to increase substantially in the coming decade. While an emissions peak is just the first and easiest step towards eventually reaching the net-zero emissions required to stop the world from continuing to warm, it demonstrates that linkages between emissions and economic activity are not an immutable law, but rather simply a result of our current means of energy production. In recent years we have seen more and more examples of absolute decoupling — economic growth accompanied by falling CO2 emissions. Since 2005, 32 countries with a population of at least one million people have absolutely decoupled emissions from economic growth, both for terrestrial emissions (those within national borders) and consumption emissions (emissions embodied in the goods consumed in a country). This includes the United States, Japan, Mexico, Germany, United Kingdom, France, Spain, Poland, Romania, Netherlands, Belgium, Portugal, Sweden, Hungary, Belarus, Austria, Bulgaria, El Salvador, Singapore, Denmark, Finland, Slovakia, Norway, Ireland, New Zealand, Croatia, Jamaica, Lithuania, Slovenia, Latvia, Estonia, and Cyprus. Figure 1, below, shows the declines in territorial emissions (blue) and increases in GDP (red). To qualify as having experienced absolute decoupling, we require countries included in this analysis to pass four separate filters: a population of at least one million (to focus the analysis on more representative cases), declining territorial emissions over the 2005-2019 period (based on a linear regression), declining consumption emissions, and increasing real GDP (on a purchasing power parity basis, using constant 2017 international $USD). We chose not to include 2020 in this analysis because it is not particularly representative of longer-term trends, and consumption and territorial emissions estimates are not yet available for many countries. There is a wide range of rates of economic growth between 2005-2019 among countries experiencing absolute decoupling. Somewhat counterintuitively, there is no significant relationship between the rate of economic growth and the magnitude of emissions reductions within the group. While it is unlikely that there is not at least some linkage between the two factors, there are plenty of examples of countries (e.g., Singapore, Romania, and Ireland) experiencing both extremely rapid economic growth and large reductions in CO2 emissions. One of the primary criticisms of some prior analyses of absolute decoupling is that they ignore leakage. Specifically, the offshoring of manufacturing from high-income countries over the past three decades to countries like China has led to “illusory” drops in emissions, where the emissions associated with high-income country consumption are simply shipped overseas and no longer show up in territorial emissions accounting. There is some truth in this critique, as there was a large increase in emissions embodied in imports from developing countries between 1990 and 2005. After 2005, however, structural changes in China and a growing domestic market led to a reversal of these trends; the amount of emissions “exported” from developed countries to developing countries has actually declined over the past 15 years. This means that, for many countries, both territorial emissions and consumption emissions (which include any emissions “exported” to other countries) have jointly declined. In fact, on average, consumption emissions have been declining slightly faster than territorial emissions since 2005 in the 32 countries we identify as experiencing absolute decoupling. Figure 2, below, shows the change in consumption emissions (teal) and GDP (red) between 2005 and 2019. There is a pretty wide variation in the extent to which these countries have reduced their territorial and consumption emissions since 2005. Some countries — such as the UK, Denmark, Finland, and Singapore – have seen territorial emissions fall faster than consumption emissions, while the US, Japan, Germany, and Spain (among others) have seen consumption emissions fall faster. Figure 3 shows reductions in consumption and territorial emissions for each country, with the size of the dot representing the size of the population in 2019. Absolute decoupling is possible. There is no physical law requiring economic growth — and broader increases in human wellbeing — to necessarily be linked to CO2 emissions. All of the services that we rely on today that emit fossil fuels — electricity, transportation, heating, food — can in principle be replaced by near-zero carbon alternatives, though these are more mature in some sectors (electricity, transportation, buildings) than in others (industrial processes, agriculture). This is not to say that infinite economic growth is desirable (or even possible), particularly given that the global population is expected to start to shrink by the end of the 21st century (and well before that in most currently wealthy countries). There will be some tradeoffs between economic growth and climate mitigation — particularly if the world is to meet ambitious mitigation targets. But it is possible to envision a world that is prosperous, equal, and at net-zero emissions; indeed, all of the future emissions scenarios used by the Intergovernmental Panel on Climate Change (IPCC) do just that.

#### 3] Capitalism is inevitable – self-hatred, love for the game, and lack of recognition of subjugation all disprove their thesis. Independently, neoliberal governments crack down on unions which kills aff solvency.

Han ’15 [Byung-Chul, “Why revolution is no longer possible”, 10-23-2015, https://www.opendemocracy.net/en/transformation/why-revolution-is-no-longer-possible/]//pranav

Accordingly, I tried to say why revolution is no longer possible today. Why is the neoliberal system of domination so stable? Why is there so little resistance to it? Why does the resistance that does occur so quickly come to naught? Why, despite the ever-expanding divide between rich and poor, is revolution no longer possible? To explain this state of affairs, we need a precise understanding of how power and domination function today. Anyone wishing to install a new system of rule must eliminate resistance. The same holds for the neoliberal order. Implementing a new system of dominion requires an instance of power that posits; often, this entails the use of force. However, power that posits a system is not identical to power that stabilizes a system internally. As is well known, Margaret Thatcher, the standard bearer of neoliberalism, treated unions as “internal enemies” and combated them violently. For all that, using force to establish the neoliberal agenda does not amount to system-preserving power. System-preserving power is not repressive, but seductive In disciplinary and industrial society, system-preserving power was repressive. Factory workers were brutally exploited by factory owners. Such violent exploitation of others’ labor entailed acts of protest and resistance. There, it was possible for a revolution to topple the standing relations of production. In that system of repression, both the oppressors and the oppressed were visible. There was a concrete opponent — a visible enemy —and one could offer resistance. The neoliberal system of domination has a wholly different structure. Now, system-preserving power no longer works through repression, but through seduction — that is, it leads us astray. It is no longer visible, as was the case under the regime of discipline. Now, there is no longer a concrete opponent, no enemy suppressing freedom that one might resist. Neoliberalism turns the oppressed worker into a free contractor, an entrepreneur of the self. Today, everyone is a self-exploiting worker in their own enterprise. Every individual is master and slave in one. This also means that class struggle has become an internal struggle with oneself. Today, anyone who fails to succeed blames themselves and feels ashamed. People see themselves, not society, as the problem. The subjugated subject is not even aware of its subjugation Any disciplinary power that expends effort to force human beings into a straitjacket of commandments and prohibitions proves inefficient. It is significantly more efficient to ensure that people subordinate themselves to domination on their own. The efficacy defining the system today stems from the fact that, instead of operating through prohibition and privation, it aims to please and fulfill. Instead of making people compliant, it endeavors to make them dependent. This logic of neoliberal efficiency also holds for surveillance. In the 1980s, to cite one example, there were vehement protests against the German national census. Even schoolchildren took to the streets. From today’s perspective, the information requested therein— profession, education levels, and distance from the workplace — seem almost laughable. At the time, people believed that they were facing the state as an instance of domination wresting data from citizens against their will. That time is long past. Today, people expose themselves willingly. Precisely this sense of freedom is what makes protest impossible. In contrast to the days of the census, hardly anyone protests against surveillance. Free self-disclosure and self-exposure follow the same logic of efficiency as free self-exploitation. What is there to protest against? Oneself? Conceptual artist Jenny Holzer has formulated the paradox of the present situation: “Protect me from what I want.” It is important to distinguish between power that posits and power that preserves. Today, power that maintains the system assumes a “smart” and friendly guise. In so doing, it makes itself invisible and unassailable. The subjugated subject does not even recognize that it has been subjugated. The subject thinks she is free. This mode of domination neutralizes resistance quite effectively. Domination that represses and attacks freedom is not stable. The neoliberal regime proves stable by immunizing itself against all resistance, because it makes use of freedom instead of repressing it. Suppressing freedom quickly provokes resistance; exploiting freedom does not. After the Asian financial crisis, South Korea stood paralyzed and shocked. The IMF intervened and extended credit. In return, the government had to assert its neoliberal agenda by force. This was repressive, positing power — the kind that often proves violent and differs from system-preserving power, which manages to pass itself off as freedom. According to Naomi Klein, the state of social shock following catastrophes such as the financial crisis in South Korea — or the current crisis in Greece — offers the chance to radically reprogram society by force. Today, there is hardly any resistance in South Korea. Quite the opposite: a vast consensus prevails — as well as depression and burnout. South Korea now has the world’s highest suicide rate. People enact violence on themselves instead of seeking to change society. Aggression directed outward, which would entail revolution, has yielded to aggression directed inward, against oneself. Today, no collaborative, networked multitude exists that might rise up in a global mass of protest and revolution. Instead, the prevailing mode of production is based on lonesome and isolated self-entrepreneurs, who are also estranged from themselves. Companies used to compete with each other. Within each enterprise, however, solidarity could occur. Today, everyone is competing against everyone else — and within the same enterprise, too. Even though such competition heightens productivity by leaps and bounds, it destroys solidarity and communal spirit. No revolutionary mass can arise from exhausted, depressive, and isolated individuals. Neoliberalism cannot be explained in Marxist terms. The famous “alienation” of labor does not even occur. Today, we dive eagerly into work — until we burn out. The first stage of burnout syndrome, after all, is euphoria. Burnout and revolution are mutually exclusive. Accordingly, it is mistaken to believe that the Multitude will cast off the parasitic Empire to inaugurate a communist society.

#### 4] Capitalism is *objectively good* in space – it’s key to American primacy, internet access, and warming. This ev assumes *ALL* of their underview warrants – every empirical example concludes negative and independently our ev postdates theirs.

Rinehart & Thierer ’21 [William Rinehart and Adam Thierer, “Why Capitalists in Space Are Good for Americans’ Future”, 08-05-2021, https://regproject.org/blog/why-capitalists-in-space-are-good-for-americans-future/]//pranav

Nothing quite exposes differing views on innovation than billionaires launching their own rockets into space. As Blue Origin ascended, carrying Amazon founder Jeff Bezos, critics rose up against private space tourism efforts. They repeated all the same slogans as the week before when Virgin Galactic CEO Richard Branson took a trip. But the harshest critics have the story backwards. We are on the precipice of an epochal shift that will help make space travel cheaper, safer, and more accessible. Thanks to nearly two decades of reform at NASA, American entrepreneurialism and ingenuity are flourishing in space. The story is told as a failure, but it is actually a sign of success. While many praised Bezos, Branson, and Elon Musk of SpaceX for using their fortunes to advance private space travel and exploration, with the goal of even getting to Mars, a vocal group of detractors blasted these capitalists for having the audacity to look toward the stars at all. Discouraging private space exploration would be a step backwards and undo positive reforms that have made space more accessible and affordable. The way that NASA did things changed dramatically in 2005 when Mike Griffin took over as Administrator. In early 2006, the Commercial Orbital Transportation Services (COTS) program was announced, which aimed to spend $500 million to develop and demonstrate commercial space launches. It was unlike anything NASA had tried before. Instead of detailed requirements which were typical at the time, COTS spent only three pages to lay out broad cargo and crew transportation capabilities. Private industry was left to innovate on their own to meet those requirements. These contractual tweaks seem minor, but they’ve been revolutionary for NASA and for the space industry. COTS pushed SpaceX and Blue Origin to begin developing reusable rockets. SpaceX’s Falcon 9 rocket has since become a workhorse, supplying the International Space Station (ISS) and launching satellites into orbit. Another milestone was reached last year when Americans were launched to the ISS on a reused Falcon 9, the first time a U.S.-built space vehicle accomplished this feat since the shuttering of the Shuttle program. COTS and its follow-on programs demonstrate what innovation can accomplish when coupled with policy reforms. About a decade ago, NASA ran the numbers on Falcon 9 and estimated its traditional system of contracting would have cost taxpayers $4 billion. SpaceX did it for $443 million, a tenth of the cost. NASA estimated that COTS’ successor, the Commercial Crew program, saved the agency some $20 billion to $30 billion over its lifetime, ultimately reducing the cost of launching hardware into space. Cheap launches mean Starlink broadband internet is potentially feasible for rural regions. Cheap launches mean satellites like Sentinel 6 which track climate change are easier to deploy. They mean more experiments in space and a better understanding of our world. But yes, cheap launches also mean billionaires can hitch a ride to space, even if some mistakenly claim it’s just the rich living out their fantasies. We have heard similar stories before. When the Wright Brothers proved flight was possible, some predicted it would never be anything more than a toy for the rich. Astronomer William H. Pickering argued that the vision of “gigantic flying machines speeding across the Atlantic carrying innumerable passengers… would be prohibitive to any but the capitalist who could use his own yacht.” Technologies of all stripes go through this process. The automobile was a novelty of the rich until it wasn’t. Cell phones were the plaything of the wealthy until they weren’t. Space travel seems poised to travel this same arc, and it was pushed along because NASA changed course and did things better. Instead of dunking on billionaires, critics should take it as a chance to learn what has gone right and apply those lessons broadly. Smarter policy combined with American ingenuity is a recipe for success, both here on Earth and out in space.

#### 5] Root cause claims are wrong- capitalism is key to reducing war and environmental destructions

Zitelman, PhD, 21

(Rainer, <https://nationalinterest.org/feature/terror-consumption-why-capitalism-gets-blamed-everything-194769>, 10-3)

Before the emergence of capitalism, a majority of the global population was living in extreme poverty. In 1820, that applied to 90 percent of the people on the planet; today, it is less than 10 percent. And most remarkably: In recent decades, since the end of communism in China and other countries, the decline in poverty has accelerated to a pace unmatched in any previous period of human history. In 1981, the poverty rate amounted to 42.7 percent; by 2000, it had fallen to 27.8 percent, and in 2021 it was only 9.3 percent. There is more good news: the number of child laborers worldwide has dropped significantly, falling from 246 million children in 2000 to 160 million twenty years later in 2020. This is despite the fact that the world population increased from 6.1 to 7.8 billion people over the same two decades. Despite these facts, most people do not like capitalism. The Edelman Trust Barometer 2020, a survey that is conducted in twenty-eight countries, concludes that, on average, 56 percent of respondents believe that “Capitalism as it exists today does more harm than good in the world.” In Europe, people in France were most likely to agree with this statement (69 percent), followed by respondents in Italy (61 percent), Spain (60 percent), Germany (55 percent) and the United Kingdom (53 percent). In both the United States and Canada, 47 percent agreed with this critical assessment of capitalism. Anti-capitalism is a political religion. In classical religions, the devil is the prototypical expression of evil in the world. In the political religion of anti-capitalism, capitalism assumes the role of evil incarnate. Accordingly, capitalism is not only responsible for all of the evils in society, but also for everyone’s personal problems. People blame capitalism for hunger, poverty, inequality, climate change, pollution, war, alienation, fascism, racism, gender inequality, slavery, colonialism, corruption, crime, mental illness and cultural decay. Wars were more frequent in pre-capitalist times than in the period since capitalism came into being. And numerous scientific studies on “capitalist peace” have shown that free trade and capitalism reduce the likelihood of military conflicts. Also, there are various studies showing that environmental standards are much better in capitalist than in non-capitalist countries—and there are the facts cited above about the extent to which capitalism has reduced hunger and poverty. So why don’t most people want to hear these facts? Well, one reason is that when it comes to topics such as hunger, poverty, climate change and war, it is very difficult to engage in a discussion based on facts. The more emotionally charged a topic is, the less willing people are to acknowledge the facts, especially when they contradict their own personal opinions. Scientists have encountered this phenomenon in many experiments and surveys. In numerous almost identical representative surveys that scientists have conducted over the past decades, respondents were presented with a sheet of paper with a picture and a speech bubble and asked the following question. “I would now like to tell you about an incident that happened the other day at a panel discussion about [then followed various topics such as genetic engineering, climate change, nuclear energy, air pollution, etc., all of which are emotionally polarizing]. Experts were talking about the risks and the state of research. Suddenly, an audience member jumps up and shouts something to the panelists and the audience.” The researchers then asked respondents to look at the person and the speech bubble on the paper that contained the words, “What do I care about numbers and statistics in this context? How can you even talk so coldly when the survival of mankind and our planet is at stake?” Below the speech bubble was a question: Would you say this person is right or wrong? That question was repeatedly asked over a period of twenty-seven years in fifteen different representative surveys on a variety of highly emotive and controversial topics. Invariably, the majority of respondents agreed with the heckler who was not interested in the facts. On average, 54.8 percent said the fact-resistant heckler was right, only 23.4 percent disagreed. Anti-capitalists cannot be convinced by facts. If there are too few goods, then capitalism is to blame. The same is true if there are too many goods (“the terror of consumption”). And even when a person goes shopping and can’t find the goods they are looking for, capitalism is to blame. Author Eula Biss is widely celebrated for her novels and begins her book on possession, capitalism, and the value of things, Having and Being Had (2020), with this anecdote: We’re on our way home from a furniture store, again. What does it say about capitalism, John asks, that we have money and want to spend it but we can’t find anything worth buying? We almost bought something called a credenza, but then John opened the drawers and discovered it wasn’t made to last. I think there are limits, I say, to what mass production can produce. Later in the book, the author recounts a conversation with her mother, who asks her if she thinks capitalism is good or bad. She responds with. “I say I’m tempted to think it’s a bad thing but I don’t really know what it is.” For many people, anti-capitalism is an emotional issue. It is a diffuse feeling of protest against the existing order. There is no evil, neither in society nor in my personal life, anti-capitalists say to themselves, that cannot be blamed on the capitalist “system,” even if it is only the fact that I can’t find any furniture to buy.

#### 6] Root cause is wrong – IBT says cap is merely one of the tools which concedes it’s not the main factor

#### 7] Marx’s only qual is that they’re a “socialist writer”…prefer our ev and historical warrants over their podcast rambling

### Adv 2

#### 1] Public and private companies must work together to overcome blockages that each industry face, only together can the process be expedited

Houser 17 (Kristin Houser is a writer for Futurism , where she covers science and tech. Her written work has appeared in Business Insider, NBC News, and the World Economic Forum’s Agenda, among other publications https://futurism.com/private-companies-not-governments-are-shaping-the-future-of-space-exploration) //HWLND

Private companies may be in the lead, but the finish line for this Space Race isn’t exactly clear. The first iteration was arguably “won” when Neil Armstrong took his first steps on the Moon, so does this sequel end when we establish the first Moon base? When a human walks on Mars? When we leave the solar system? Truthfully, the likelihood of humanity ever calling it a day on space exploration is slim to none. The universe is huge, with galaxy estimates in the trillions, so the goalpost will continue moving back (to bring another sport into the analogy). Rather than focusing on competing in what is ultimately an unwinnable race, private and government-backed space agencies can actually benefit from collaboration thanks to their inherent differences. “The way that SpaceX, Planetary Resources, or Virgin Galactic approaches space exploration is going to be very different from NASA or the Air Force,” explains Lewicki. Private companies aren’t beholden to the same slow processes that often stall government projects, and they can secure or reallocate funding much more swiftly if need be. However, unlike agencies like NASA, they do have shareholders to keep happy and a need to constantly pursue profitability. The two sectors, therefore, have a tremendous opportunity to help one another. Private companies can generate revenue through government contracts —for example, NASA has contracted Boeing to transport astronauts to the International Space Station (ISS), and SpaceX just closed a deal with the U.S. Air Force to launch its secretive space drone. This leaves the government agencies free to pursue the kind of forward-thinking, longer-term research that might not immediately generate revenue, but that can be later streamlined and improved upon in the private sector.

#### 2] Private entities are uniquely crucial to space exploration especially since governments are no longer interested after the space race

Deb 18 [Sandipan Deb is an Indian journalist and writer. He has been the Managing Editor of Outlook, the Editor of The Financial Express and was the founder-editor of Outlook Money, Open, and Swarajya magazines. He is the author of several books. “Space, the next frontier for capitalism.” Mint. March 13, 2018. <https://www.livemint.com/Opinion/NPClPMlOIIAbnwToBO0QiO/Space-the-next-frontier-for-capitalism.html>] HW AL

Jeff Bezos, the richest man on earth, has said that he has been funding his space technology firm Blue Origin at the rate of $1 billion a year and will continue to pump in his “Amazon lottery winnings into a much lower price of admission so we can go explore the solar system." He can afford it — with a net worth of $131 billion, he is richer than two-thirds of the countries of the world. And, along with Elon Musk, the founder of SpaceX, he is the face of the next giant leap of capitalism — into space. Science fiction predicted most of humanity’s technological advancements — from submarines to television, from rockets to robots. But even the most clairvoyant of sci-fi authors failed to foresee that **planet earth would lose interest in manned space exploration after putting a man on the moon.** The space race of the 1950s and 1960s had a grandiose political purpose. **When that battle had been settled, placing communication satellites in orbit became by far the major activity.** Yes, space shuttles were launched, an International Space Station (ISS) is up there, but this was hardly space exploration. The US National Aeronautics and Space Administration’s (NASA) budget, in constant 2014 dollar terms, peaked at $43.6 billion in 1966; it was $18.9 billion in 2017. There were huge potential pay-offs — the obvious one being mining minerals on asteroids and other planets, **but to governments, the returns on investments were too far-off to commit the massive upfront cash outlays.** And thus it stayed for 40 years, till a new breed of capitalists emerged — whose dreams sought frontiers beyond earth. “Our planet is finite," Bezos has said. The turning point was the retirement of the space shuttle in 2011. As a result, NASA awarded billions of dollars of contracts to private companies to carry astronauts and cargo to the ISS. **The industry suddenly bloomed; there are more than a thousand space companies in the US today.** Investment bank Goldman Sachs estimates that space start-ups have, globally, attracted $13.3 billion of investment since 2010. In 2015, President Barack Obama signed the US Commercial Space Launch Competitive Act into law, guaranteeing private companies rights to own, sell and profit from resources extracted from asteroids and other “celestial bodies". In August 2017, Luxembourg became the first European country that officially allows space resources to be “appropriated" by commercial groups based in the country. Many companies have since then set up shop in Luxembourg. Bezos’ Blue Origin has successfully launched and landed several sub-orbital flights. In February this year, SpaceX launched Falcon Heavy into orbit around the sun. The company is aiming to have manned flights by the end of the year, and says that Big Falcon Rocket (BFR), its spaceship for interplanetary travel that may carry up to 100 passengers, will be ready in 2019. Meanwhile, Bigelow Aerospace, owned by Robert Bigelow, who made his billions from his budget hotel chain, plans to set up hotels that will orbit earth. Among start-ups that are focused on space mining, Planetary Resources points out that just one little near-earth asteroid called 3554 Anum has $8 trillion worth of platinum reserves, while our current annual output is $12 billion, of which 88% comes from three mines in South Africa.

#### 3] Tons of alt causes to inequality – vaccines, economies, geopolitics, populations, environments, etc

#### 4] Dallas and Chouhan concedes space gap is NU. They have tagged it as “private appropriation” but neither of those words are in the highlighting. What this card actually says is just about how some countries have space programs while others don’t, the aff doesn’t solve that + major alt cause.

#### 5] Worst case, space tech benefits rich nations. That’s better than the squo because its not harming lower-income nations. History proves resources are shared the more abundant they are because of things like international treaties and trade, which means private space exploration helps low-income countries