# Space Neg

#### I negate. Resolved: The appropriation of outer space by private entities is unjust.

### Framework

#### The value is justice.

#### The criterion is utilitarianism.

#### Life is a prerequisite for utility because dying forecloses all future goods. This meaning we evaluate the round based on who saves the most lives.

#### There are three justifications.

#### all other consequentialist moral theories devolve to life utility because at their root they all seek to maximize the best consequences, which cannot occur without life.

#### Governments must use util calculus because they’re collective agents rather than individual agents. Prefer this standard because it’s specific to the agent of the resolution.

**Goodin 90:**

(Robert E. Goodin is professor of government at the University of Essex and professor of philosophy and social and political theory at the Australian National University. He is a Fellow of the Academy of the Social Sciences in Australia and a Corresponding Fellow of the British Academy.“The Utilitarian Response” pages 141-142. 1990.)

Consider, first, the argument from necessity. **Public officials** are obliged to **make their choices under uncertainty**, and uncertainty of a very special sort at that. All choices – public and private alike – are made under some degree of uncertainty, of course. But in the nature of things, private individuals will usually have more complete information on the peculiarities of their own circumstances and on the ramifications that alternative possible choices might have for them. **Public officials**, in contrast, **are relatively poorly informed as to the effects that their choices will have on individuals, one by one. What they typically do know are generalities: averages and aggregates**. They know what will happen most often to most people as a result of their various possible choices. But that is all.**That is enough to allow public policy-makers to use** the **utilitarian calculus** – assuming they want to use it at all – **to choose general rules of conduct.** Knowing aggregates and averages, **they can** proceed to **calculate** the **utility payoffs from adopting each alternative possible general rule**. But they cannot be sure that the payoff will do to any given individual or on any particular occasion. Their knowledge of generalities, aggregates and averages is just not sufficiently fine-grained for that.

#### Life util is the only moral theory that respects the equality of all moral agents.

**Cummiskey 90:**

(Dr. David Cummiskey, Bates College. “Kantian Consequentiaism.”Ethics, Vol. 100, No. 3 (Apr., 1990), pp. 586-615 Published by: The University of Chicago Press. Stable URL: https://www.jstor.org/stable/2381810)

We must not obscure the issue by characterizing this type of case as the sacrifice of individuals for some abstract “social entity.” It is not a question of some persons having to bear the cost for some elusive “overall social good.” Instead, the question is whether some persons must bear the inescapable cost for the sake of other persons. Robert Nozick, for example, argues that “to use a person in this way does not sufficiently respect and take account of the fact that he is a separate person, that his is the only life he has.” But why is this not equally true of all those whom we do not save through our failure to act? By emphasizing solely the one who must bear the cost if we act, we fail to sufficiently respect and take account of the **many other** separate **persons**, each with only one life, who will **bear the cost of our inaction**. In such a situation, what would a conscientious Kantian agent, an agent motivated by the unconditional value of rational beings, choose? A morally good agent recognizes that the basis of all particular duties is the principle that “rational nature exists as an end in itself”. Rational nature as such is the supreme objective end of all conduct. **If one truly believes that all rational beings have an equal value, then the rational solution to such a dilemma involves maximally promoting the lives** and liberties **of as many rational beings as possible**. In order to avoid this conclusion, the non-consequentialist Kantian needs to justify agent-centered constraints. As we saw in chapter 1, however, even most Kantian deontologists recognize that agent-centered constraints require a non- value-based rationale. But we have seen that Kant’s normative theory is based on an unconditionally valuable end. How can a concern for the value of rational beings lead to a refusal to sacrifice rational beings even when this would prevent other more extensive losses of rational beings? If the moral law is based on the value of rational beings and their ends, then what is the rationale for prohibiting a moral agent from maximally promoting these two tiers of value? If I sacrifice some for the sake of others, I do not use them arbitrarily, and I do not deny the unconditional value of rational beings. Persons may have “dignity, that is, an unconditional and incomparable worth” that transcends any market value, but persons also have a fundamental **equality** that **dictates that some must** sometimes **give way for the sake of others.** The concept of the end-in-itself does not support the view that we may never force another to bear some cost in order to benefit others.

### Contention 1: Asteroid Mining

#### Competition means that the private sector is more time and cost efficient than the government.

Marc **Thiessen**, 6-1, **21**, Washington Post, Opinion: SpaceX’s success is one small step for man, one giant leap for capitalism, https://www.washingtonpost.com/opinions/2020/06/01/spacexs-success-is-one-small-step-man-one-giant-leap-capitalism/

It was one small step for man, one giant leap for capitalism. Only three countries have ever launched human beings into orbit. This past weekend, SpaceX became the first private company ever to do so, when it sent its Crew Dragon capsule into space aboard its Falcon 9 rocket and docked with the International Space Station. This was accomplished by a company Elon Musk started in 2002 in a California strip mall warehouse with just a dozen employees and a mariachi band. At a time when our nation is debating the merits of socialism, SpaceX has given us an incredible testament to the power of American free enterprise***.*** While the left is advocating unprecedented government intervention in almost every sector of the U.S. economy, from health care to energy, today Americans are celebrating the successful privatization of space travel***.*** If you want to see the difference between what government and private enterprise can do, consider: It took a private company to give us the first space vehicle with touch-screen controls instead of antiquated knobs and buttons. It took a private company to give us a capsule that can fly entirely autonomously from launch to landing — including docking — without any participation by its human crew. It also took a private company to invent a reusable rocket that can not only take off but land as well. When the Apollo 11 crew reached the moon on July 20, 1969, Neil Armstrong declared “the Eagle has landed.” On Saturday, SpaceX was able to declare that the Falcon had landed when its rocket settled down on a barge in the Atlantic Ocean — ready to be used again. That last development will save the taxpayers incredible amounts of money. The cost to NASA for launching a man into space on the space shuttle orbiter was $170 million per seat, compared with just $60 million to $67 million on the Dragon capsule. The cost for the space shuttle to send a kilogram of cargo into to space was $54,500; with the Falcon rocket, the cost is just $2,720 — a decrease of 95 percent. And while the space shuttle cost $27.4 billion to develop, the Crew Dragon was designed and built for just $1.7 billion — making it the lowest-cost spacecraft developed in six decades. SpaceX did it in six years — far faster than the time it took to develop the space shuttle. The private sector does it better, cheaper, faster and more efficiently than government. Why? Competition***.*** Today, SpaceX has to compete with a constellation of private companies — including legacy aerospace firms such as Orbital ATK and United Launch Alliance and innovative start-ups such as Blue Origin (which is designing a Mars lander and whose owner, Jeff Bezos, also owns The Post) and Virgin Orbit (which is developing rockets than can launch satellites into space from the underside of a 747, avoiding the kinds of weather that delayed the Dragon launch). In the race to put the first privately launched man into orbit, upstart SpaceX had to beat aerospace behemoth Boeing and its Starliner capsule to the punch*.* It did so — for more than $1 billion less than its competitor. That spirit of competition and innovation will revolutionize space travel in the years ahead***.*** Indeed, Musk has his sights set far beyond Earth orbit. Already, SpaceX is working on a much larger version of the Falcon 9 reusable rocket called Super Heavy that will carry a deep-space capsule named Starship capable of carrying up to 100 people to the moon and eventually to Mars. Musk’s goal — the reason he founded SpaceX — is to colonize Mars and make humanity a multiplanetary species. He has set a goal of founding a million-person city on Mars by 2050 complete with iron foundries and pizza joints. Can it be done? Who knows. But this much is certain: Private-sector innovation is opening the door to a new era of space exploration. Wouldn’t it be ironic if, just as capitalism is allowing us to explore the farthest reaches of our solar system, Americans decided to embrace socialism back here on Earth?

#### Private entities are key to asteroid mining and fulfilling demand for rare earth elements, as well as preventing environmental damage due to mining.

**Britt 21** (Hugo Britt, August 19, 2021, Companies Are Preparing for Space Mining, <https://www.thomasnet.com/insights/companies-are-preparing-for-space-mining/>) SJ

Rare Earth Materials Are Abundant. There are around two million near-earth asteroids brimming with rare earth minerals, precious metals, iron, and nickel*.* The Moon contains helium-3, yttrium, samarium, and lanthanum, while Mars contains an abundance of magnesium, aluminum, titanium, iron, chromium, and trace amounts of lithium, cobalt, tungsten, and other metals. Importantly, many planetary bodies contain water, which through hydrolysis can be used as rocket fuel. It Helps with Sustainability Earth’s resources are finite. [Non-renewable metal resources are inherently unsustainable](https://www.nature.com/articles/s43247-020-0011-0)*,* and mining causes environmental degradation all over the world. The answer is to source our minerals off-world. Off-world minerals are exhaustible as well, but the argument is that mining lifeless rocks such as the Moon or asteroids is infinitely preferable to continuing to damage Earth’s fragile biosphere. Discoveries May Be Made Opening space to commercial mining does not mean that science takes a back seat. Space-mining interests could drive scientific advancement by discovering extremely rare or unknown minerals on other planetary bodies. Robotics Would Do the Work While countless lives have been lost on Earth over the centuries due to mining accidents and disasters, it is likely that humans will not have to risk their lives by traveling in-person to off-world mining sites. [Regolith-sampling probes](https://www.thomasnet.com/insights/nasa-uses-pogo-stick-probe-to-retrieve-sample-from-asteroid-that-may-one-day-hit-earth/) are already in use and provide an early glimpse of what a scaled-up robotic mining craft may one day look like. Off-Earth Mining and Space Law The [1967 Outer Space Treaty](https://www.thomasnet.com/insights/is-the-outer-space-treaty-outdated/) is unclear in terms of whether any country — or private company — can claim mineral rights in space. It states that “exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind.” The [1979 Moon Treaty](https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html) was an attempt to declare the Moon and its natural resources to be CHM (Common Heritage of Mankind). Significantly, it called for “an equitable sharing [by all countries] in the benefits derived from these resources.” Most nations, including the U.S., did not ratify this treaty. Recently, the U.S. has accelerated its efforts to create a legal framework for the exploitation of resources in space. The Obama administration signed the [U.S. Commercial Space Launch Competitiveness Act of 2015](https://www.faa.gov/about/office_org/headquarters_offices/ast/media/US-Commercial-Space-Launch-Competitiveness-Act-2015.pdf), allowing U.S. citizens to “engage in the commercial exploration and exploitation of space resources.” In April 2020, the Trump administration issued an [executive order](https://www.space.com/trump-moon-mining-space-resources-executive-order.html) supporting U.S. mining on the Moon and asteroids. In May 2020, NASA unveiled the [Artemis Accords](https://www.washingtonpost.com/technology/2020/05/15/moon-rules-nasa-artemis/), which included the development of safety zones around lunar mining sites. Former NASA administrator Jim Bridenstine said: “It’s time to establish the regulatory certainty to extract and trade space resources,” and clarified in a separate statement that: “We do believe we can extract and utilize the resources of the moon, just as we can extract and utilize tuna from the ocean.” NASA planned an [Asteroid Redirect Mission](https://www.nasa.gov/content/what-is-nasa-s-asteroid-redirect-mission) which involved collecting a multi-ton boulder from an asteroid and redirecting it into a stable orbit around the moon, but the mission was canceled in 2017. What Companies Are Preparing for a Future of Space Mining? One thing that is becoming clear is that off-earth mining is unlikely to be a state-run activity. Instead, several private companies are jockeying to be first in line to access minerals in space. [iSpace](https://ispace-inc.com/) (Japan) has a mission to “help companies access new business opportunities on the moon,” including the extraction of water and mineral resources to spearhead a space-based economy*.* Planetary Resources (defunct) was founded in 2009 with the goal of developing a robotic asteroid mining industry. Despite having high-profile founding investors including Alphabet’s Larry Page, Eric Schmidt, and Virgin Group founder Richard Branson, Planetary ran into financial trouble in 2018 and was gone by 2020. Deep Space Industries (defunct) was another early mover that intended to explore, examine, sample, and harvest minerals from asteroids. DSI was acquired by Bradford Space in 2019*.* [Offworld](https://www.offworld.ai/) is an AI company building “universal industrial robots to do the heavy lifting [including mining] on Earth, the Moon, asteroids, and Mars*.”* [The Asteroid Mining Corporation](https://asteroidminingcorporation.co.uk/) (UK) is a venture currently crowdfunding for a 2023 satellite mission called “El Dorado,” which will conduct a spectral survey of 5,000 asteroids to identify the most valuable for mining. Alongside the U.S., the tiny European nation of Luxembourg has also developed a space mining framework and has subsequently [emerged as a European hub](https://www.businesswire.com/news/home/20201118005699/en/) for the fledgling industry.

#### There are three main impacts to asteroid mining.

#### First, asteroid mining is key to avoiding extinction due to lack of resources.

Crombrugghe 18 (Guerric Crombrugghe is a Business Development Manager Brussels @ Brussels Capital Region, “Asteroid mining as a necessary answer to mineral scarcity”, LinkedIn, 1/11/2018, <https://www.linkedin.com/pulse/asteroid-mining-necessary-answer-mineral-scarcity-de-crombrugghe>)//NotJacob

We need minerals, and we always will. Yet, our reserves are finite and a 100% end-of-life recycling rate is impossible to achieve. Eventually, new entrants will therefore be required to sustain our system. While the business case for asteroid mining can obviously not be closed with current technologies, it will someday become a necessity. We may as well start preparing ourselves. Scarcity of resources, the challenge of the 21st century According to the World Bank, in 2016 humanity's growth rate was of 1.18% in terms of population, and 2.50% in terms of GDP. Both of these, in turn, drive our staggering resource consumption: there are more of us, and each of us needs more. On the other, the Earth is a closed system, and resources are only available in a finite amount. We all know by now that there is only this much oil & gas, but the same can actually be said for water, arable land, minerals, etc. These two simple observations have sparkled the debate around the scarcity of resources. Even with the best intentions, mathematics teaches us that it is impossible to indefinitely extract resources from a given finite supply [1]. The problem arising in the short-term is the exhaustion of the existing supply. That limit is actually coming in fast. In a paper published in 2007, Stephen Kessler demonstrates that the global mineral reserves are only sufficient for the next 50 years. The figure on the right shows the ratio of known global reserve to global annual consumption, given a rough indication of adequacy in years. It dates from an earlier paper, published in 1994. Since then, the development of environmental-friendly technologies (e.g. batteries, electric engines, etc.) has drastically increased the consumption rate of high-tech metals such as cobalt, platinum, rare earths, or titanium. On the other hand, exploration programs have allowed to discover new deposits, notably of gold and diamond. We will certainly be able to continue to increase - or at least sustain - our reserves, but only temporarily. Recycling and other temporary fixes An obvious solution is recycling, i.e. rejuvenating our stocks. A popular concept to illustrate this idea is that of urban mining: retrieving the ores present in smartphones and other electronic devices. It may prove to be not only more environmental-friendly, be also safer and more cost-effective. Nevertheless, every solution based on recycling is, again, nothing more than a temporary fix, buying us a finite amount of time. The United Nations Environment Programme studied in a report the current recycling rate of 60 metals. More than half of them have an end-of-life recycling rate below 1%, and less than one-third are above 50%. Nickel, for example, is relatively easy to retrieve, with and end-of-life recycling rate of up to 63% under the best conditions. At that rate, less than 1% of the initial stock is available after only 10 cycle. Even with a staggering 99% efficiency, the same 1% limit is achieved in less than 460 cycles. Not bad, of course, but still not enough. Should our hunger for resources continue, and even with the most optimised recycling techniques, a second problem will arise in the longer term: the amount of resources needed at a given time will simply exceed the total available stock. Unless we manage to find growth vectors that do not require raw materials, that tipping point is an impassable limit. Its proximity obviously depends on our consumption rate. Asteroid mining? No matter which way we look at it, we will thus be short on resources, either through sheer exhaustion (i.e. transformation in an unrecoverable form) or because the demand will exceed the total reserves. We can - and should - talk about recycling, dematerialisation, and other more ethically questionable solutions such as bio-engineering. Nonetheless, no matter how good they are, these are only temporary fixes. If we don't radically change our lifestyle, we will sooner or later have to address the elephant in the room: the Earth is a closed system, we need new entrants. How can space help? Short answer: all these minerals can be found in space. Some are difficult to obtain, others are even more difficult, none are straightforward. The most accessible destination is near-Earth asteroids, a reservoir of over 17,000 known - and counting - giant rocks that regularly cross the orbit of our planet. They are commonly classified in three main families. The most interesting one, for our case, is that of the S-type asteroids. These are metallic bodies, containing first and foremost nickel, iron and cobalt, but also gold, ores from the platinum group. But the list doesn't stop there, many other minerals can be found in smaller amounts: iridium, silver, osmium, palladium, rhenium, rhodium, ruthenium, manganese, molybdenum, aluminium, titanium, etc. How do we get there? Let's take an example: Ryugu, formerly known as 1999 JU3. It's a C-type asteroid measured to be approximately one kilometre in size [2]. In addition to nickel, iron and cobalt, it also contains a fair share of water, nitrogen, hydrogen, and ammonia. Its total value is estimated to be approximately 80 billion USD. Fantastic! But how do we get there and, most importantly, how much does it cost? Well, we may have the start of an answer to these questions. Reaching Ryugu is a technological challenge, but it is feasible. In December 2014, the Japanese space agency has launched a spacecraft, Hayabusa2, heading to the asteroid. Its mission includes the collection of a small sample which will be sent back to the Earth, with a landing planned for December 2020. The target for the sample size is at least 100 µg. The total cost of the mission was projected to be around 200 million USD. That's 2 trillion USD per gram. Let's be optimistic and assume that the sample retrieved is pure gold. At today's rate, it is worth 42.5 USD per gram. That's a difference of over 10 orders of magnitude. Some may argue that Hayabusa2 has many other objectives that retrieving a sample. The mission does indeed include multiple landers, thorough scientific investigations, etc. There is actually another asteroid sample return mission underway, which we could you as a second point of comparison: OSIRIS-Rex, from NASA. It's heading for Bennu, also a C-type asteroid, which it will reach in August 2018. Total cost of the mission: 980 million USD. Target sample size: at least 60 g. We achieve thus roughly speaking 16 million USD per gram. Better, but still 6 orders of magnitude off compared to pure gold. It's pretty much as good as it gets with existing state-of-the-art technologies. Not much of a business case. Should we forget about it? Referring back to our earlier conclusion on resource scarcity, we had two options. Either we drastically reduce our resource consumption, to such a degree that reserves can last for longer than humanity itself, or we extend our closed system, the Earth, to nearby asteroids. In the current state of affairs, I am honestly not sure which course of action is the easiest. As they get increasingly rare, the cost of minerals will go up. On the other hand, as explained in a previous article, we can expect the cost of space activities to go steadily down. Step by step, these 6 orders of magnitude will slowly get munched away from both ends, until eventually asteroid mining becomes a viable operation. In other words: it will only become financially interesting once minerals become a thousand times more expensive and space activities a thousand times cheaper. As a point of reference, the introduction of reusable rockets by SpaceX, widely considered as one of the few truly disruptive changes in the aerospace sector in the last few decades, has "only" brought a cost reduction of 30%. While it's clearly amazing, we still need at least 220 innovations of the same calibre [3] before we can make it work (again: assuming the price of minerals simultaneously goes up by a factor of a thousand). It's therefore quite likely that space mining will not take place within our lifetime [4]. How can we accelerate the process? Firstly, we can only celebrate and support the numerous private initiatives which contribute to make that reality happen, either indirectly (e.g. launchers, space systems, etc.) or directly (e.g. in-space manufacturing, lunar exploration, etc.). Shout out to all the folks who manage to keep the flame of space exploration burning while generating profit for their investors. Secondly, space agencies and other institutional actors should continue to act as promoters of pioneering mission such as Hayabusa2, OSIRIS-REx, or DART. We can only regret that the Asteroid Redirect Mission from NASA and the Asteroid Impact Mission from ESA were not funded. From my perspective, these should actually be amongst the top priorities of our space exploration agenda. Not only are they instrumental to our understanding of the solar system, but they are also essential if we want to avoid the same fate as the dinosaurs. It's a question of survival. As a bonus, they also pave the way towards cost-efficient asteroid mining. In the meantime, we might want to consume existing resources a bit more efficiently.

#### Second, asteroid mining is key to preventing resource wars.

Aziz 13 – John, “How asteroid mining could add trillions to the world economy,” The Week, <https://theweek.com/articles/462830/how-asteroid-mining-could-add-trillions-world-economy>

Resources on Earth are limited. Our planet was born with a fixed amount of water, hydrocarbons, nitrogen, and industrial and precious metals. And we're collecting, processing, and eventually throwing out those resources at an alarming rate: A United Nations report on resource depletion says that between 1980 and 2008 natural resources per capita declined by 20 percent in the United States, 33 percent in South Africa, 25 percent in Brazil, and 17 percent in China. For now, only protection and better resource management can safeguard the planet. As we burn through Earth's resources, a wealth of physical resources like metals, water, and hydrocarbons are floating around in asteroids, moons, and other planets, ready to be harvested. If human civilization is to continue to grow and expand over the centuries and millennia to come, hunger for resources is likely to drive us to explore and mine what's way, way out there. And as wild as it may sound, asteroids in particular could be highly profitable. In 1997 scientists speculated that a relatively small metallic asteroid with a diameter of 0.99 miles contains more than $20 trillion worth of industrial and precious metals. Yet, space mining is still in its infancy, and exploring it is costly. A NASA mission to an asteroid to bring back 2 kg (about 4.5 pounds) of material in 2021 is expected to cost the space agency $1 billion. But two companies are exploring asteroid mining, as well: Deep Space Industries, and Planetary Resources, which has the backing of several billionaire investors, including Google's Larry Page and Eric Schmidt, software executive Charles Simonyi, and filmmaker James Cameron. When Planetary Resources was founded in 2012, its founders boldly claimed the company could "add trillions of dollars to the global GDP" and "create a new industry and a new definition of 'natural resources.'" While neither company has gotten off the ground yet, Planetary Resources successfully raised $1 million in crowdfunding to place a new telescope, ARKYD, in space to hunt for Earthlike planets. Peter Diamandis, Planetary Resources' CEO, estimates that an asteroid 98 feet long could contain as much as $50 billion in platinum, and might also yield water for human consumption, or for producing hydrogen fuel. The potential benefits to asteroid mining reach far beyond just profit, economic growth, and expanding Earth's resource base. While mining on Earth can be highly destructive to natural habitats — resulting in deforestation, soil erosion, chemical contamination, and the pollution of groundwater — mining in space doesn't damage any natural habitats. Even more significantly, less resource bottlenecks means less potential for future resource wars between competing countries — a frightening scenario which the Pentagon has begun planning to address if need be.

#### AND preventing resources wars are key to preventing nuclear wars.

**Landman 07**

Stephen **Lendman**, 6/6/**2007**. Renowned author and Research Associate of the Center for Research on Globalization (CRG). The Centre for Research on Globalization (CRG) is an independent research and media organization based in Montreal. The CRG is involved in book publishing, support to humanitarian projects as well as educational outreach activities including the organization of public conferences and lectures. The Centre also acts as a think tank on crucial economic and geopolitical issues. Stephen has written extensively on war and peace, social justice in America and many other national and international issues. Stephen Lendman is a recipient of a 2008 Project Censored Award, University of California at Sonoma – “Resource Wars – Can We Survive Them?” – Global Research, June 06, 2007 – http://www.globalresearch.ca/resource-wars-can-we-survive-them/5892

With the world’s energy supplies finite, the US heavily dependent on imports, and “peak oil” near or approaching, “security” for America means **assuring a sustainable supply** of what we can’t do without. It includes **waging wars** to get it, protect it, and defend the maritime trade routes over which it travels. That means energy’s partnered with predatory New World Order globalization, militarism, wars, ecological recklessness, and now an extremist US administration willing to risk Armageddon for world dominance. Central to its plan is first controlling essential resources everywhere, at any cost, starting with oil and where most of it is located in the Middle East and Central Asia. The New “Great Game” and Perils From It The new “Great Game’s” begun, but this time the stakes are greater than ever as explained above. The old one lasted nearly 100 years pitting the British empire against Tsarist Russia when the issue wasn’t oil. This time, it’s the US with help from Israel, Britain, the West, and satellite states like Japan, South Korea and Taiwan challenging Russia and China with today’s weapons and technology on both sides making earlier ones look like toys. At stake is more than oil. It’s planet earth with survival of all life on it issue number one twice over. Resources and wars for them means militarism is increasing, peace declining, and the planet’s ability to sustain life front and center, if anyone’s paying attention. They’d better be because beyond the point of no return, there’s no second chance the way Einstein explained after the atom was split. His famous quote on future wars was : “I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones.” Under a worst case scenario, it’s more dire than that. There may be nothing left but resilient beetles and bacteria in the wake of a nuclear holocaust meaning even a new stone age is way in the future, if at all. The threat is real and once nearly happened during the Cuban Missile Crisis in October, 1962. We later learned a miracle saved us at the 40th anniversary October, 2002 summit meeting in Havana attended by the US and Russia along with host country Cuba. For the first time, we were told how close we came to nuclear Armageddon. Devastation was avoided only because Soviet submarine captain Vasily Arkhipov countermanded his order to fire nuclear-tipped torpedos when Russian submarines were attacked by US destroyers near Kennedy’s “quarantine” line. Had he done it, only our imagination can speculate what might have followed and whether planet earth, or at least a big part of it, would have survived.

#### Lastly, asteroid mining solves environmental terrestrial mining impacts—particularly ocean acidification and global warming

**Hlimi 14** (Tina Hlimi is a International Secretariat Member and Health & Hazards Coordinator for the Centre for International Sustainable Development Law (CISDL) in Montreal, Quebec, “THE NEXT FRONTIER: AN OVERVIEW OF THE LEGAL AND ENVIRONMENTAL IMPLICATIONS OF NEAR-EARTH ASTEROID MINING”, Annals of Air and Space Law Vol. 39, 2014, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2546924>)//NotJacob

In addition to demystifying the legal doctrine governing outer space natural resource appropriation it is also necessary to weigh the benefits and detriments of space-faring activities. Foremost, States around the world are developing at unprecedented rates and the human population is mounting in conjunction with demand for natural resources to sustain the current and newly established western standard of living. One of the fastest growing nations, China, is experiencing unhindered growth facilitated by fossil fuel use from coal and extensive mining. This has caused substantial water, soil and air degradation. In the face of these troubles, NEA mining could be the key to preserving the Earth's bounty and replenishing contaminated water supplies. The influx of natural resources could thwart the burning of dirty coal and fossil fuels, thereby mitigating the effects of climate change, such as, rising sea level, atmospheric pollution, melting of sea ice and rising temperatures. NEA harvesting could also protect the ocean and the fragile and largely unexplored deep seabeds 123 from oil and gas drilling. It could furthermore protect ecosystems from rare-earth mineral mining predominantly used to fuel the electronics sector. 124 NEA mining is especially pertinent as China restricted its global exports of rare-earth minerals in 2009, incongruously citing the need to protect the environment. Unfortunately, the supply cuts have forced dependent States like Japan, the United States and South Korea to heighten rare-Earth mineral exploration. This accordingly led to Japan's 2011 discovery of rare-earth minerals in the ocean-bed deposits of the Pacific Exclusive Economic Zone (PEEZ) thereby necessitating risky, deep-sea mining techniques, which may result in marine pollution if not carefully designed and developed. Other States, which have joined the environmentally destructive rare-earth mineral exploration movement include India, Canada, Tanzania, Australia, Brazil and Vietnam., There is accordingly much competition and exploration for rare-earth minerals which could result in significant exploitation of untouched areas like the PEEZ seabed and Mongolia.125 Other regions which may soon be targeted for mineral and hydrological resources include Antarctica and the Arctic. With the advent of technological advances, environmentally destructive practices such as refining may soon occur in outer space, sparing the Earth of pollution. 126 Accordingly, NEA mining is a viable technology for preserving the Earth's environment by curbing atmospheric and marine pollution, enhancing water supply and quality and mitigating the effects of climate change; all while allowing humankind to maintain and even improve their standard of living through increased technologies, consumption and population growth.

### Contention 2: Get Off The Rock

#### If humans remain on Earth, extinction for humanity is inevitable.

**Dunlop and Spratt 19**

(David Spratt is is research director for the Melbourne-based Breakthrough National Centre for Climate Restoration and coauthor of the book Climate Code Red: The Case for Emergency Action (Scribe, 2008). Ian Dunlop is a senior Advisory Board member of the Breakthrough National Centre for Climate Restoration. “Existential climate-related security risk: A scenario approach”. May, 2019. https://docs.wixstatic.com/ugd/148cb0\_b2c0c79dc4344b279bcf2365336ff23b.pdf)

**A number of ecosystems collapse, including coral reef systems, the Amazon rainforest and in the Arctic. Some poorer nations and regions, which lack capacity to provide artificially-cooled environments for their populations, become unviable. Deadly heat conditions persist for more than 100 days per year in West Africa, tropical South America, the Middle East and South-East Asia, contributing to more than a billion people being displaced from the tropical zone**. **Water availability decreases sharply in the most affected regions at lower latitudes (dry tropics and subtropics), affecting about two billion people worldwide.** Agriculture becomes nonviable in the dry subtropics. 9 Existential climate-related security risk: A scenario approach **Most regions in the world see a significant drop in food production and increasing numbers of extreme weather events, including heat waves, floods and storms.** Food production is inadequate to feed the global population and food prices skyrocket, as a consequence of a one-fifth decline in crop yields, a decline in the nutrition content of food crops, a catastrophic decline in insect populations, desertification, monsoon failure and chronic water shortages, and conditions too hot for human habitation in significant food-growing regions. The lower reaches of the agriculturally-important river deltas such as the Mekong, Ganges and Nile are inundated, and significant sectors of some of the world’s most populous cities — including Chennai, Mumbai, Jakarta, Guangzhou, Tianjin, Hong Kong, Ho Chi Minh City, Shanghai, Lagos, Bangkok and Manila — are abandoned. **Some small islands become uninhabitable. Ten percent of Bangladesh is inundated, displacing 15 million people. Even for 2°C of warming, more than a billion people may need to be relocated and In high-end scenarios, the scale of destruction is beyond our capacity to model, with a high likelihood of human civilisation coming to an end.** 21 21 Wariaro, V., et al. 2018. Global Catastrophic Risks 2018, Stockholm, Global Challenges Foundation, 24. National security consequences: For pragmatic reasons associated with providing only a sketch of this scenario, we take the conclusion of the Age of Consequences ‘Severe’ 3°C scenario developed by a group of senior US national-security figures in 2007 as appropriate for our scenario too: Massive nonlinear events in the global environment give rise to massive nonlinear societal events. **In this scenario, nations around the world will be overwhelmed by the scale of change and pernicious challenges, such as pandemic disease. The internal cohesion of nations will be under great stress, including in the United States, both as a result of a dramatic rise in migration and changes in agricultural patterns and water availability. The flooding of coastal communities around the world, especially in the Netherlands, the United States, South Asia, and China, has the potential to challenge regional and even national identities. Armed conflict between nations over resources, such as the Nile and its tributaries, is likely and nuclear war is possible. The social consequences range from increased religious fervor to outright chaos. In this scenario, climate change provokes a permanent shift in the relationship of humankind to nature’. (emphasis added)**

#### Private sector gets us off the rock.

**Diakovska 20** [Halyna Diakovska and Olga Aliieva, Ph.D.s in Philosophy, Associate Professors, Donbass State Pedagogical University, “Consequentialism and Commercial Space Exploration,” 2020, *Philosophy and Cosmology*, Vol. 24, pp. 5-24, https://doi.org/10.29202/phil-cosm/24/1, EA]

**The experience of the USA showed that leadership in space exploration, which is maintained solely through public funding, could be erroneous. Since 1984, the share of public funding has gradually decreased in space telecommunications, commercial space transportation, remote sensing, etc., while the share of participation of non-state enterprises has increased rapidly. A legal and regulatory framework has been modified to stimulate space commercialization. The stages of space law development are discussed in the research of Valentyn Halunko (Halunko, 2019), Larysa Soroka (Soroka & Kurkova, 2019), etc. Larysa Soroka and Kseniia Kurkova explored the specifics of the legal regulation of the use and development of artificial intelligence for the space area (Soroka & Kurkova, 2019).**

**As a result of changing the legal framework and attracting private investors to the space market, the US did not lose its leadership in space exploration, but rather secured it. Private investment along with government funding have significantly reduced the risk of business projects in the space industry. The quality and effectiveness of space exploration programs have increased.**

**In 2018, Springer published an eloquent book The Rise of Private Actors in the Space Sector. Alessandra Vernile, the author of the book, explores a broad set of topics that reveal the role of private actors in space exploration (Vernile, 2018). The book covers the following topics: “Innovative Public Procurement and Support Schemes,” “New Target Markets for Private Actors,” etc. In the “Selected Success Stories,” Vernile provides examples of successful private actors in space exploration (Vernile, 2018).**

**The current level of competition, which has developed on the space market, allows us to state the following fact. Private space companies have been able to compete with entire states in launching spacecraft, transporting cargo to orbital stations, and exploring space objects. The issue of mining on space objects, the creation of space settlements and the intensive development of the space tourism market are on the agenda.**

**In the 21st century, the creation of non-governmental commercial organizations specializing in the field of commercial space exploration, is regarded as an ordinary activity. They are established as parts of the universities around projects funded by private investors. For example, Astropreneurship & Space Industry Club based on the MIT community (Astropreneurship, 2019).**

**Large-scale research in the field of commercial space exploration, as well as the practical results achieved, led to the formation of a new paradigm called “New Space” ecosystem. The articles of Deganit Paikowsky’s (Paikowsky, 2017), Clelia Iacomino (Iacomino & Ciccarelli, 2018) et al. reveal its key meanings and the opportunities it offers in the space sector. The “New Space” ecosystem is a new vision for commercial space exploration. It is the formation of a cosmic worldview, in which the near space with all the wealth of its resources and capabilities, becomes a part of the global economy and the sustainable development of the society. The “New Space” ecosystem offers the following ways for commercial space exploration (Iacomino & Ciccarelli, 2018):**

**1. Innovative public procurement and support schemes, which significantly expand the role of commercial actors in space exploration.**

**2. Attracting new entrants in the space sector. First of all, these are companies working in the domain of Information and communications technology, artificial intelligence, etc. that are expanding their research**

**in space markets. They offer innovative business models and new solutions to space commercialization.**

**3. Innovative industrial approaches based on new processes, methods, and industrial organization for the development and production of space systems or launchers.**

**4. Disruptive market solutions, which significantly reduce commercial space exploration prices, increase labor productivity, provide new types of services, etc.**

**5. Substantial private investment from different sources and involving different funding mechanisms. For instance, these are private fortunes, venture capital firms, business angels, private equity companies, or banks, etc.**

**6. Involvement of an increasing number of space-faring nations investing in the acquisition of turnkey space capabilities or even in the development of a domestic space industrial base. This expands the space markets and makes it more competitive.**

**The analysis of the research and advances in commercial space exploration allows us to draw the following conclusions:**

**1. In fact, the space market has already been created. It is currently undergoing continuous development that will integrate the resources and capabilities of the near space into the global economy over the next decade.**

**2. A new paradigm, denoted by the term “New Space” ecosystem, is at the heart of the created space market. The “New Space” ecosystem is a step towards the formation of cosmic thinking, in which outer space, with its resources and capabilities, is considered as a sphere of human activities.**

**3. Space market regulates space law, which is constantly evolving. The space law develops within the bounds of international law. In essence, the space market is integrated into the international legal field and is governed by its laws.**